

김천의료원 증축 구조계산

2024. 03.

(주) 에스엠구조

SM structural Engineers CO.,LTD

제 출 문

김천의료원 귀중

귀 측에서 의뢰하신 경상북도 김천시 모암동 85-1 소재 「김천의료원 증축
구조계산」에 대한 결과를 본 보고서로 제출합니다.

2024. 03.

(주)에스엠구조
(국토교통부 안전진단 전문기관)

대표이사 이 호 상



등록번호 제 대구-47호

안전진단 전문기관 등록증

1. 상 호 : (주)에스엠구조
2. 대 표 자 : 권지은, 이호상
3. 사무소소재지 : 대구광역시 동구 이노밸리로26길 23, 401호(각산동, 효성빌딩)
4. 등 록 분 야 : 건축분야
5. 등록 연월일 : 2018년 5월 8일

「시설물의 안전 및 유지관리에 관한 특별법」
제28조에 따른 안전진단전문기관으로 등록합니다.

2019년 12월 27일
(주소지 변경)

대 구 광 역 시 장



참 여 기 술 진 명 단

참여구분		이 름(직위)	참여분야	자 격
참 여 기 술 진	책임기술인	이 호 상(대표이사) 	용역총괄	특급기술자 건축구조기술사
	참여기술인	박 현 식(이사) 	자료검토 및 기술검토	특급기술자 건축공학박사
	참여기술인	심 규 성(차장) 	현장조사 및 자료정리	고급기술자
	참여기술인	장 혜 정(대리) 	현장조사 및 자료정리	초급기술자

구 조 검 토 서

■ 용역명 : 김천의료원 증축 구조계산 용역

■ 내용 : 장례식장 지상3층, 지상4층 증축에 따른 구조체의 구조안전성 여부 확인

대상 건물은 지하1층, 지상4층 규모의 의료시설 용도의 철근콘크리트조 건물로 금회 장례식장 지상3층, 지상4층 증축을 하고자 하며, 이를 고려하여 고정하중 및 활하중을 적용하여 구조검토를 실시한 결과 전 층의 슬래브 및 기둥의 구조내력은 문제가 없는 것으로 나타났다. 지상2층 바닥보의 경우 일부 보(2G8)은 휨 및 전단내력이 부족한 것으로 나타났고 일부 보(2G3, 2B1)은 휨내력이 부족한 것으로 나타났다.

따라서 대상건물 구조안전성 확보를 위해 보강이 필요하고, 첨부한 보강위치도 및 보강 상세도에 따라 보강을 실시한 후 증축을 실시한다면 대상건물의 구조안전성에 문제가 없을 것으로 판단된다.

2024. 03.



(주) 에 스 엠 구 조

대구시 동구 이노밸리로26길 23

효성빌딩 401호(각산동)

건축구조기술사 이 호 상 (인)



문서번호 : SMS-24-03

발주처 :

TEL :

構 造 計 算 書

STRUCTURAL ANALYSIS AND DESIGN

김천의료원 증축 구조계산

위 건축물에 대하여 건축법 제 38조 및 건축법 시행령 제 32조(구조안전의 확인)에 따라 기술사법에 의거 등록된 건축구조기술사가 구조계산을 수행하여 구조안전을 확인하였으므로, 본 구조계산서에 표시된 구조재료의 강도, 지반조건, 설계하중을 유의하여 구조도면에 표기하시기 바랍니다.

구조안전을 확인한 설계도면과 시방서에는 한국기술사회에 등록된 인장으로 날인합니다. 시공상태에 대한 구조안전의 확인이 필요한 경우엔 골조공사에 대한 현장점검과 안전확인을 요청하시기 바랍니다.

구 조 계 산

장 해 정

승 인

이 호 상



주 식 회 사 에 스 엠 구 조

대 표 이 사 : 이 호 상



대구광역시 동구 이노밸리로26길 23 효성빌딩 401호(각산동)

TEL : 053)383-3312 FAX : 053)289-3314

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6. 보 강 설 계

1. 구조 개요

1.0 설 계 개 요

1.1 건 물 개 요

용역명	김천의료원 증축에 따른 구조안전진단
위치	경상북도 김천시 모암동 85-1
용도	의료시설
건물규모	지하1층, 지상4층 / 연면적(2,994.0㎡)

1.2 적용기준 및 참고자료

구분	적용기준	비고
구조설계 방법	·철근콘크리트조 : 극한강도설계법 ·철골구조 : 허용응력 설계법, 한계상태설계법	국토교통부 대한건축학회
관련법규	·건축법 및 동 시행령/ 규칙 ·건축물의 구조기준 등에 관한 규칙	국토교통부 국토교통부
적용 기준	·건축구조설계기준(KDS41) ·건축기초구조설계기준	대한건축학회 대한건축학회
참고 기준	·건축물 하중기준 및 해설 ·내진설계지침서 작성에 관한 연구 ·콘크리트 표준시방서	대한건축학회 대한건축학회 국토교통부

1.3 사용재료의 규격 및 강도

사용재료	규격 및 설계강도
콘크리트	·fck = 24 MPa
철근	·fy = 400 MPa (SD400)

1.4 구조방식

골조	철근콘크리트조
기초	독립기초, 복합기초, 줄기초

1.5 구조해석 프로그램

사용 PROGRAM	적용사항
MIDAS / GENw	· 골조응력해석 · 횡력해석
MIDAS / SET	· 단위부재 설계용

1.6 하중조건

1.6.1 고정하중 : 구조부재크기, 마감두께, 벽체두께 등을 고려하여 산정함.
단, 마감두께가 미결정상황인 경우는 일반적인 관례를 고려하여 적용함.

1.6.2 적재하중 : 구조규준에 따른 용도별 적재하중을 적용함.
단, 용도구분이 모호한 경우에는 비슷한 용도에 준하여 적용함.

1.6.3 풍하중

설계지역	경북 김천시	
설계기본풍속(V_o)	$V_o=28\text{m/sec}$	
노풍도	C	
풍속의 고도분포계수(K_{zr})	$Z \leq Z_b$	1.0
	$Z_b < Z \leq Z_g$	$0.71 Z^\alpha$
	여기서, $Z_b=10.0\text{m}$, $Z_g=350$, $\alpha=0.15$ 임	
지형에의한 풍속할증계수(K_{zt})	1.0(경사, 산 및 언덕의 영향이 없는 지역)	
중요도계수(I_w)	0.95	
풍상벽의 외압계수(C_{pe1})	$0.8K_z + 0.03(D/B)$	
풍하벽의 외압계수(C_{pe2})	$L/B \leq 1.0$ 인 경우 -0.5	
	$L/B > 1.0$ 인 경우 $-0.5 + 0.25 \ln(D/B)^{0.8}$	
측벽	-0.7	

1.6.4 지진하중

지 역 계 수 (S)	지진지역 1	$S = 0.22$
중요도 계 수 (IE)	내진등급 II	$I_E = 1.00$
동 적 계 수 (C)	$C = \frac{S}{1.2\sqrt{T}} \leq 1.5$ $T=0.0466(h_n)^{(9/10)} : \text{철근콘크리트모멘트골조}$	
지 반 종 별 (S)	연약한 토사지반	S_5
단주기스펙트럼 가속도(S_{DS})	$S_{DS} = 0.49867$	C
장주기스펙트럼 가속도(S_{D1})	$S_{D1} = 0.28747$	D
내진설계범주	D	정적해석법
반응수정계수 (R)	철근콘크리트구조기준의 일반규정만을 만족하는 철근콘크리트구조 시스템	$R=3.0$
시스템초과 강도계수 (Ω_0)	철근콘크리트구조기준의 일반규정만을 만족하는 철근콘크리트구조 시스템	$\Omega_0=3.0$
변위증폭계수 (C_d)	철근콘크리트구조기준의 일반규정만을 만족하는 철근콘크리트구조 시스템	$C_d=3.0$
허용층간변위 (Δ_a)	내진등급 II	0.020

1.6.5 적설하중

지 역	경북 김천시
지붕적설하중계수 (C_b)	0.7
노출계수 (C_e)	1.0 (C)
온도계수(C_t)	1.0
중요도계수(I_s)	1.2 (2)
100년 재현주기 지상적설하중(S_g)	0.5 (kN/㎡)

- $S_f = 0.7 \times 1.0 \times 1.0 \times 1.2 \times 0.5 = 0.42\text{kN/㎡}$
- $S_s = 1.0\text{kN/㎡}$ 적용

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	Company		Client	
	Author		File Name	자료원 장래예식장건축관련 구조안전성검토_ver.1

WIND LOADS BASED ON KDS(41-12:2022) (General Method/Middle Low Rise Building) [UNIT: kN, m]

Exposure Category	: C
Basic Wind Speed [m/sec]	: $V_o = 28.00$
Importance Factor	: $I_w = 0.95$
Average Roof Height	: $H = 19.90$
Topographic Effects	: Not Included
Directional Factor of X-Direction	: $K_{dx} = 1.00$
Directional Factor of Y-Direction	: $K_{dy} = 1.00$
Structural Rigidity	: Rigid Structure
Gust Factor of X-Direction	: $G_{Dx} = 1.93$
Gust Factor of Y-Direction	: $G_{Dy} = 1.88$
Scaled Wind Force	: $F = \text{ScaleFactor} * WD$
Wind Force	: $WD = P_f * \text{Area}$
Pressure	: $P_f = qH * G_{Dx} * C_{pe1} - qH * G_{Dy} * C_{pe2}$
Across Wind Force	: $WLC = \gamma * WD$ $\gamma = 0.35 * (D/B) \geq 0.2$ $\gamma_{X} = 0.20$ $\gamma_{Y} = 0.61$
Max. Displacement	: Not Included
Max. Acceleration	: Not Included
Velocity Pressure at Design Height z [N/m ²]	: $q_z = 0.5 * 1.225 * V_z^2$
Velocity Pressure at Mean Roof Height [N/m ²]	: $q_H = 0.5 * 1.225 * V_H^2$
Calculated Value of qH for X-Direction[N/m ²]	: $q_{Hx} = 535.85$
Calculated Value of qH for Y-Direction[N/m ²]	: $q_{Hy} = 535.85$
Basic Wind Speed at Design Height z [m/sec]	: $V_z = V_o * K_d * K_{zr} * K_{zt} * I_w$
Basic Wind Speed at Mean Roof Height [m/sec]	: $V_H = V_o * K_d * K_{Hr} * K_{zt} * I_w$
Calculated Value of V _H for X-Direction [m/sec]	: $V_{Hx} = 29.58$
Calculated Value of V _H for Y-Direction [m/sec]	: $V_{Hy} = 29.58$
Height of Planetary Boundary Layer	: $Z_b = 10.00$
Gradient Height	: $Z_g = 350.00$
Power Law Exponent	: $\alpha = 0.15$
Exposure Velocity Pressure Coefficient	: $K_{zr} = 1.00 \quad (Z \leq Z_b)$
Exposure Velocity Pressure Coefficient	: $K_{zr} = 0.71 * Z^\alpha \quad (Z_b < Z \leq Z_g)$
Exposure Velocity Pressure Coefficient	: $K_{zr} = 0.71 * Z_g^\alpha \quad (Z > Z_g)$
K _{zr} at Mean Roof Height (K _{Hr})	: $K_{Hr} = 1.11$
Scale Factor for X-directional Wind Loads	: $S_{Fx} = 1.00$
Scale Factor for Y-directional Wind Loads	: $S_{Fy} = 0.00$

Wind force of the specific story is calculated as the sum of the forces of the following two parts.

1. Part I : Lower half part of the specific story
2. Part II : Upper half part of the just below story of the specific story

The reference height for the calculation of the wind pressure related factors are, therefore, considered separately for the above mentioned two parts as follows.

Reference height for the wind pressure related factors(except topographic related factors)

1. Part I : top level of the specific story
2. Part II : top level of the just below story of the specific story

Reference height for the topographic related factors :

1. Part I : bottom level of the specific story
2. Part II : bottom level of the just below story of the specific story

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PRESSURE in the table represents Pf value

** Pressure Distribution Coefficients at Windward Walls (kz)

** External Wind Pressure Coefficients at Windward and Leeward Walls (Cpe1, Cpe2)

STORY NAME	kz	Cpe1(X-DIR) (Windward)	Cpe1(Y-DIR) (Windward)	Cpe2(X-DIR) (Leeward)	Cpe2(Y-DIR) (Leeward)
Roof	0.935	0.798	0.748	-0.350	-0.500
11F	0.935	0.798	0.748	-0.350	-0.500
10F	0.935	0.798	0.748	-0.350	-0.500
9F	0.935	0.748	0.798	-0.500	-0.350
8F	0.930	0.794	0.744	-0.350	-0.500
7F	0.913	0.781	0.731	-0.350	-0.500
6F	0.896	0.767	0.717	-0.350	-0.500
5F	0.853	0.732	0.682	-0.350	-0.500
4F	0.832	0.000	0.666	0.000	-0.500
3F	0.813	0.000	0.651	0.000	-0.500
2F	0.813	0.701	0.651	-0.350	-0.500
1F	0.813	0.701	0.651	-0.350	-0.500

** Exposure Velocity Pressure Coefficients at Windward and Leeward Walls (Kzr)

** Topographic Factors at Windward and Leeward Walls (Kzt)

** Basic Wind Speed at Design Height (Vz) [m/sec]

** Velocity Pressure at Design Height (qz) [Current Unit]

STORY NAME	KHr	Kzt (Windward)	Kzt (Leeward)	VHx	VHy	qHx	qHy
Roof	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
11F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
10F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
9F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
8F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
7F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
6F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
5F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
4F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
3F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
2F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
1F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585

WIND LOAD GENERATION DATA ALONG X-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	1.185949	20.0	1.1	33.1873	1.3697709	0.0	1.3697709	0.0	0.0
11F	1.185949	17.8	1.55	1.05	1.9301318	0.0	1.9301318	1.3697709	3.013496
10F	1.185949	16.9	1.1	1.05	28.371443	0.0	28.371443	3.2999027	5.9834085
9F	1.289237	15.6	1.1	33.1873	28.369226	0.0	28.369226	31.671346	47.156158
8F	1.181256	14.7	0.9	1.05	1.1098739	0.0	1.1098739	60.040571	101.19267
7F	1.167684	13.8	1.5	1.05	15.328289	0.0	15.328289	61.150445	156.22807
6F	1.153517	11.7	1.5	12.2	20.912977	0.0	20.912977	76.478734	316.83342
5F	1.117745	10.8	1.5	12.2	6.1364184	0.0	6.1364184	97.391711	404.48596
4F	0.0	8.7	1.5	0.0	0.0	0.0	0.0	103.52813	621.89503
3F	0.0	7.8	2.4	0.0	70.237188	0.0	70.237188	103.52813	715.07034

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2F	1.085327	3.9	3.9	33.1873	96.057117	0.0	96.057117	173.76532	1392.7551
G.L.	1.085327	0.0	1.95	12.2	0.0	0.0	—	269.82243	2445.0626

WIND LOAD GENERATION DATA ALONG Y-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	1.258778	20.0	1.1	57.9284	34.893331	0.0	0.0	0.0	0.0
11F	1.258778	17.8	1.55	25.2	49.167875	0.0	0.0	0.0	0.0
10F	1.258778	16.9	1.1	25.2	38.719572	0.0	0.0	0.0	0.0
9F	1.157931	15.6	1.1	32.4784	38.667608	0.0	0.0	0.0	0.0
8F	1.254196	14.7	0.9	25.2	28.294894	0.0	0.0	0.0	0.0
7F	1.240945	13.8	1.5	25.2	46.541722	0.0	0.0	0.0	0.0
6F	1.227113	11.7	1.5	25.2	45.98879	0.0	0.0	0.0	0.0
5F	1.192185	10.8	1.5	25.2	44.632705	0.0	0.0	0.0	0.0
4F	1.175863	8.7	1.5	25.2	44.273773	0.0	0.0	0.0	0.0
3F	1.160534	7.8	2.4	25.2	144.25476	0.0	0.0	0.0	0.0
2F	1.160534	3.9	3.9	57.9284	262.18862	0.0	0.0	0.0	0.0
G.L.	1.160534	0.0	1.95	57.9284	0.0	0.0	—	0.0	0.0

WIND LOAD GENERATION DATA ACROSS X-DIRECTION

(ALONG WIND : Y-DIRECTION)

STORY NAME	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	20.0	1.1	57.9284	6.9970374	0.0	0.0	0.0	0.0
11F	17.8	1.55	25.2	9.8594618	0.0	0.0	0.0	0.0
10F	16.9	1.1	25.2	7.7643001	0.0	0.0	0.0	0.0
9F	15.6	1.1	32.4784	7.75388	0.0	0.0	0.0	0.0
8F	14.7	0.9	25.2	5.6738759	0.0	0.0	0.0	0.0
7F	13.8	1.5	25.2	9.3328485	0.0	0.0	0.0	0.0
6F	11.7	1.5	25.2	9.221971	0.0	0.0	0.0	0.0
5F	10.8	1.5	25.2	8.95004	0.0	0.0	0.0	0.0
4F	8.7	1.5	25.2	8.8780647	0.0	0.0	0.0	0.0
3F	7.8	2.4	25.2	28.926902	0.0	0.0	0.0	0.0
2F	3.9	3.9	57.9284	52.575766	0.0	0.0	0.0	0.0
G.L.	0.0	1.95	57.9284	0.0	0.0	—	0.0	0.0

WIND LOAD GENERATION DATA ACROSS Y-DIRECTION

(ALONG WIND : X-DIRECTION)

STORY NAME	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	20.0	1.1	33.1873	0.8367819	0.0	0.8367819	0.0	0.0
11F	17.8	1.55	1.05	1.1791017	0.0	1.1791017	0.8367819	1.8409201
10F	16.9	1.1	1.05	17.331883	0.0	17.331883	2.0158836	3.6552154
9F	15.6	1.1	33.1873	17.330528	0.0	17.330528	19.347767	28.807312
8F	14.7	0.9	1.05	0.6780129	0.0	0.6780129	36.678295	61.817777
7F	13.8	1.5	1.05	9.3639265	0.0	9.3639265	37.356308	95.438454
6F	11.7	1.5	12.2	12.775567	0.0	12.775567	46.720234	193.55095
5F	10.8	1.5	12.2	3.7486879	0.0	3.7486879	59.495801	247.09717
4F	8.7	1.5	0.0	0.0	0.0	0.0	63.244489	379.91059

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3F	7.8	2.4	0.0	42.907325	0.0	42.907325	63.244489	0.0
2F	3.9	3.9	33.1873	58.680508	0.0	58.680508	106.15181	167.33857
G.L.	0.0	1.95	12.2	0.0	0.0	—	164.83232	1493.6688

WIND LOADS BASED ON KDS(41-12:2022) (General Method/Middle Low Rise Building) [UNIT: kN, m]

Exposure Category	: C
Basic Wind Speed [m/sec]	: $V_0 = 28.00$
Importance Factor	: $I_w = 0.95$
Average Roof Height	: $H = 19.90$
Topographic Effects	: Not Included
Directional Factor of X-Direction	: $K_{dx} = 1.00$
Directional Factor of Y-Direction	: $K_{dy} = 1.00$
Structural Rigidity	: Rigid Structure
Gust Factor of X-Direction	: $G_{Dx} = 1.93$
Gust Factor of Y-Direction	: $G_{Dy} = 1.88$
Scaled Wind Force	: $F = \text{ScaleFactor} * WD$
Wind Force	: $WD = P_f * \text{Area}$
Pressure	: $P_f = q_H * G_D * C_{pe1} - q_H * G_D * C_{pe2}$
Across Wind Force	: $WLC = \gamma * WD$ $\gamma = 0.35 * (D/B) \geq 0.2$ $\gamma_{X} = 0.20$ $\gamma_{Y} = 0.61$
Max. Displacement	: Not Included
Max. Acceleration	: Not Included
Velocity Pressure at Design Height z [N/m^2]	: $q_z = 0.5 * 1.225 * V_z^2$
Velocity Pressure at Mean Roof Height [N/m^2]	: $q_H = 0.5 * 1.225 * V_H^2$
Calculated Value of q_H for X-Direction [N/m^2]	: $q_{Hx} = 535.85$
Calculated Value of q_H for Y-Direction [N/m^2]	: $q_{Hy} = 535.85$
Basic Wind Speed at Design Height z [m/sec]	: $V_z = V_0 * K_d * K_{zr} * K_{zt} * I_w$
Basic Wind Speed at Mean Roof Height [m/sec]	: $V_H = V_0 * K_d * K_{Hr} * K_{zt} * I_w$
Calculated Value of V_H for X-Direction [m/sec]	: $V_{Hx} = 29.58$
Calculated Value of V_H for Y-Direction [m/sec]	: $V_{Hy} = 29.58$
Height of Planetary Boundary Layer	: $Z_b = 10.00$
Gradient Height	: $Z_g = 350.00$
Power Law Exponent	: $\alpha = 0.15$
Exposure Velocity Pressure Coefficient	: $K_{zr} = 1.00$ ($Z \leq Z_b$)
Exposure Velocity Pressure Coefficient	: $K_{zr} = 0.71 * Z^\alpha$ ($Z_b < Z \leq Z_g$)
Exposure Velocity Pressure Coefficient	: $K_{zr} = 0.71 * Z_g^\alpha$ ($Z > Z_g$)
K_{zr} at Mean Roof Height (K_{Hr})	: $K_{Hr} = 1.11$
Scale Factor for X-directional Wind Loads	: $S_{Fx} = 0.00$
Scale Factor for Y-directional Wind Loads	: $S_{Fy} = 1.00$

Wind force of the specific story is calculated as the sum of the forces of the following two parts.

- Part I : Lower half part of the specific story
- Part II : Upper half part of the just below story of the specific story

The reference height for the calculation of the wind pressure related factors are, therefore, considered separately for the above mentioned two parts as follows.

Reference height for the wind pressure related factors(except topographic related factors)

- Part I : top level of the specific story
- Part II : top level of the just below story of the specific story

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Reference height for the topographic related factors :

1. Part I : bottom level of the specific story
2. Part II : bottom level of the just below story of the specific story

PRESSURE in the table represents Pf value

** Pressure Distribution Coefficients at Windward Walls (kz)

** External Wind Pressure Coefficients at Windward and Leeward Walls (Cpe1, Cpe2)

STORY NAME	kz	Cpe1(X-DIR) (Windward)	Cpe1(Y-DIR) (Windward)	Cpe2(X-DIR) (Leeward)	Cpe2(Y-DIR) (Leeward)
Roof	0.935	0.798	0.748	-0.350	-0.500
11F	0.935	0.798	0.748	-0.350	-0.500
10F	0.935	0.798	0.748	-0.350	-0.500
9F	0.935	0.748	0.798	-0.500	-0.350
8F	0.930	0.794	0.744	-0.350	-0.500
7F	0.913	0.781	0.731	-0.350	-0.500
6F	0.896	0.767	0.717	-0.350	-0.500
5F	0.853	0.732	0.682	-0.350	-0.500
4F	0.832	0.000	0.666	0.000	-0.500
3F	0.813	0.000	0.651	0.000	-0.500
2F	0.813	0.701	0.651	-0.350	-0.500
1F	0.813	0.701	0.651	-0.350	-0.500

** Exposure Velocity Pressure Coefficients at Windward and Leeward Walls (Kzr)

** Topographic Factors at Windward and Leeward Walls (Kzt)

** Basic Wind Speed at Design Height (Vz) [m/sec]

** Velocity Pressure at Design Height (qz) [Current Unit]

STORY NAME	KHr	Kzt (Windward)	Kzt (Leeward)	VHx	VHy	qHx	qHy
Roof	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
11F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
10F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
9F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
8F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
7F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
6F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
5F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
4F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
3F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
2F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585
1F	1.112	1.000	1.000	29.578	29.578	0.53585	0.53585

WIND LOAD GENERATION DATA ALONG X-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN'G MOMENT
Roof	1.185949	20.0	1.1	33.1873	1.3697709	0.0	0.0	0.0	0.0
11F	1.185949	17.8	1.55	1.05	1.9301318	0.0	0.0	0.0	0.0
10F	1.185949	16.9	1.1	1.05	28.371443	0.0	0.0	0.0	0.0
9F	1.289237	15.6	1.1	33.1873	28.369226	0.0	0.0	0.0	0.0
8F	1.181256	14.7	0.9	1.05	1.1098739	0.0	0.0	0.0	0.0
7F	1.167684	13.8	1.5	1.05	15.328289	0.0	0.0	0.0	0.0

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6F	1.153517	11.7	1.5	12.2	20.912977	0.0	0.0	0.0	0.0
5F	1.117745	10.8	1.5	12.2	6.1364184	0.0	0.0	0.0	0.0
4F	0.0	8.7	1.5	0.0	0.0	0.0	0.0	0.0	0.0
3F	0.0	7.8	2.4	0.0	70.237188	0.0	0.0	0.0	0.0
2F	1.085327	3.9	3.9	33.1873	96.057117	0.0	0.0	0.0	0.0
G.L.	1.085327	0.0	1.95	12.2	0.0	0.0	--	0.0	0.0

WIND LOAD GENERATION DATA ALONG Y-DIRECTION

STORY NAME	PRESSURE	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	1.258778	20.0	1.1	57.9284	34.893331	0.0	34.893331	0.0	0.0
11F	1.258778	17.8	1.55	25.2	49.167875	0.0	49.167875	34.893331	76.765328
10F	1.258778	16.9	1.1	25.2	38.719572	0.0	38.719572	84.061206	152.42041
9F	1.157931	15.6	1.1	32.4784	38.667608	0.0	38.667608	122.78078	312.03543
8F	1.254196	14.7	0.9	25.2	28.294894	0.0	28.294894	161.44839	457.33897
7F	1.240945	13.8	1.5	25.2	46.541722	0.0	46.541722	189.74328	628.10792
6F	1.227113	11.7	1.5	25.2	45.98879	0.0	45.98879	236.285	1124.3064
5F	1.192185	10.8	1.5	25.2	44.632705	0.0	44.632705	282.27379	1378.3528
4F	1.175863	8.7	1.5	25.2	44.273773	0.0	44.273773	326.9065	2064.8565
3F	1.160534	7.8	2.4	25.2	144.25476	0.0	144.25476	371.18027	39.846396
2F	1.160534	3.9	3.9	57.9284	262.18862	0.0	262.18862	515.43503	562.59356
G.L.	1.160534	0.0	1.95	57.9284	0.0	0.0	--	777.62365	7441.8476

WIND LOAD GENERATION DATA ACROSS X-DIRECTION

(ALONG WIND : Y-DIRECTION)

STORY NAME	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	20.0	1.1	57.9284	6.9970374	0.0	6.9970374	0.0	0.0
11F	17.8	1.55	25.2	9.8594618	0.0	9.8594618	6.9970374	15.393482
10F	16.9	1.1	25.2	7.7643001	0.0	7.7643001	16.856499	30.564332
9F	15.6	1.1	32.4784	7.75388	0.0	7.75388	24.620799	62.571371
8F	14.7	0.9	25.2	5.6738759	0.0	5.6738759	32.374679	91.708582
7F	13.8	1.5	25.2	9.3328485	0.0	9.3328485	38.048555	125.95228
6F	11.7	1.5	25.2	9.221971	0.0	9.221971	47.381404	225.45323
5F	10.8	1.5	25.2	8.95004	0.0	8.95004	56.603375	276.39627
4F	8.7	1.5	25.2	8.8780647	0.0	8.8780647	65.553415	414.05844
3F	7.8	2.4	25.2	28.926902	0.0	28.926902	74.431479	481.04677
2F	3.9	3.9	57.9284	52.575766	0.0	52.575766	103.35838	884.14446
G.L.	0.0	1.95	57.9284	0.0	0.0	--	155.93415	1492.2876

WIND LOAD GENERATION DATA ACROSS Y-DIRECTION

(ALONG WIND : X-DIRECTION)

STORY NAME	ELEV.	LOADED HEIGHT	LOADED BREADTH	WIND FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN`G MOMENT
Roof	20.0	1.1	33.1873	0.8367819	0.0	0.0	0.0	0.0
11F	17.8	1.55	1.05	1.1791017	0.0	0.0	0.0	0.0
10F	16.9	1.1	1.05	17.331883	0.0	0.0	0.0	0.0
9F	15.6	1.1	33.1873	17.330528	0.0	0.0	0.0	0.0
8F	14.7	0.9	1.05	0.6780129	0.0	0.0	0.0	0.0

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7F	13.8	1.5	1.05	9.3639265	0.0	0.0	0.0	0.0
6F	11.7	1.5	12.2	12.775567	0.0	0.0	0.0	0.0
5F	10.8	1.5	12.2	3.7486879	0.0	0.0	0.0	0.0
4F	8.7	1.5	0.0	0.0	0.0	0.0	0.0	0.0
3F	7.8	2.4	0.0	42.907325	0.0	0.0	0.0	0.0
2F	3.9	3.9	33.1873	58.680508	0.0	0.0	0.0	0.0
G.L.	0.0	1.95	12.2	0.0	0.0	--	0.0	0.0

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* MASS GENERATION DATA FOR LATERAL ANALYSIS OF BUILDING [UNIT: kN, m]

STORY NAME	TRANSLATIONAL MASS (X-DIR) (Y-DIR)		ROTATIONAL MASS	CENTER OF MASS (X-COORD) (Y-COORD)	
Roof	909.471553	909.471553	271499.821	34.2499	10.5650425
11F	11.0935353	11.0935353	705.803288	14.1188663	9.2
10F	309.448898	309.448898	23378.1125	13.7621296	5.35141187
9F	765.127202	765.127202	123885.731	42.3206297	12.4948291
8F	11.0935353	11.0935353	705.803288	14.1188663	9.2
7F	307.952426	307.952426	23240.6452	13.74952	5.34522502
6F	752.63331	752.63331	129998.623	41.8379005	12.4405234
5F	304.71227	304.71227	22994.986	13.7294384	5.32472567
4F	10.8367183	10.8367183	687.688735	14.084186	9.2
3F	1361.93221	1361.93221	491522.513	32.1542533	10.6910066
2F	1010.22046	1010.22046	338010.754	27.636176	7.07158608
1F	0.0	0.0	0.0	0.0	0.0
TOTAL :	5754.52212	5754.52212			

* ADDITIONAL MASSES FOR THE CALCULATION OF EQUIVALENT SEISMIC FORCE

Note. The following masses are between two adjacent stories or on the nodes released from floor rigid diaphragm by *Diaphragm Disconnect command. The masses are proportionally distributed to upper/lower stories according to their vertical locations. For dynamic analysis, however, floor masses and masses on vertical elements remain at their original locations.

STORY NAME	TRANSLATIONAL MASS (X-DIR) (Y-DIR)	
Roof	0.0	0.0
11F	0.0	0.0
10F	0.0	0.0
9F	0.0	0.0
8F	0.0	0.0
7F	0.0	0.0
6F	0.0	0.0
5F	0.0	0.0
4F	0.0	0.0
3F	0.0	0.0
2F	0.0	0.0
1F	222.590871	222.590871
TOTAL :	222.590871	222.590871

* EQUIVALENT SEISMIC LOAD IN ACCORDANCE WITH KOREAN BUILDING CODE (KDS(41-17-00:2019)) [UNIT: kN, m]

Seismic Zone	: 1
EPA (S)	: 0.22
Site Class	: S4
Acceleration-based Site Coefficient (Fa)	: 1.36000
Velocity-based Site Coefficient (Fv)	: 1.96000
Design Spectral Response Acc. at Short Periods (Sds)	: 0.49867
Design Spectral Response Acc. at 1 s Period (Sd1)	: 0.28747
Seismic Use Group	: II
Importance Factor (Ie)	: 1.00
Seismic Design Category from Sds	: C

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Seismic Design Category from Sd1 : D
 Seismic Design Category from both Sds and Sd1 : D
 Period Coefficient for Upper Limit (Cu) : 1.4125
 Fundamental Period Associated with X-dir. (Tx) : 0.4598
 Fundamental Period Associated with Y-dir. (Ty) : 0.4598
 Response Modification Factor for X-dir. (Rx) : 3.0000
 Response Modification Factor for Y-dir. (Ry) : 3.0000

 Exponent Related to the Period for X-direction (Kx) : 1.0000
 Exponent Related to the Period for Y-direction (Ky) : 1.0000

 Seismic Response Coefficient for X-direction (Csx) : 0.1662
 Seismic Response Coefficient for Y-direction (Csy) : 0.1662

 Total Effective Weight For X-dir. Seismic Loads (Wx) : 56428.843892
 Total Effective Weight For Y-dir. Seismic Loads (Wy) : 56428.843892

 Scale Factor For X-directional Seismic Loads : 1.00
 Scale Factor For Y-directional Seismic Loads : 0.00

 Accidental Eccentricity For X-direction (Ex) : Positive
 Accidental Eccentricity For Y-direction (Ey) : Positive

 Torsional Amplification for Accidental Eccentricity : Do not Consider
 Torsional Amplification for Inherent Eccentricity : Do not Consider

 Total Base Shear Of Model For X-direction : 9379.727829
 Total Base Shear Of Model For Y-direction : 0.000000
 Summation Of $W_i \cdot H_i^k$ Of Model For X-direction : 654249.435040
 Summation Of $W_i \cdot H_i^k$ Of Model For Y-direction : 0.000000

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ECCENTRICITY RELATED DATA

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STORY NAME	X - D I R E C T I O N A L L O A D				Y - D I R E C T I O N A L L O A D			
	ACCIDENTAL ECCENT.	INHERENT ECCENT.	ACCIDENTAL AMP.FACTOR	INHERENT AMP.FACTOR	ACCIDENTAL ECCENT.	INHERENT ECCENT.	ACCIDENTAL AMP.FACTOR	INHERENT AMP.FACTOR
Roof	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
11F	-0.0525	0.0	1.0	0.0	1.26	0.0	1.0	0.0
10F	-0.61	0.0	1.0	0.0	1.26	0.0	1.0	0.0
9F	-1.6593649	0.0	1.0	0.0	1.6239201	0.0	1.0	0.0
8F	-0.0525	0.0	1.0	0.0	1.26	0.0	1.0	0.0
7F	-0.61	0.0	1.0	0.0	1.26	0.0	1.0	0.0
6F	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
5F	-0.61	0.0	1.0	0.0	1.26	0.0	1.0	0.0
4F	0.0	0.0	1.0	0.0	1.26	0.0	1.0	0.0
3F	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
2F	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
G.L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The accidental amplification factors are automatically set to 1.0 when torsional amplification effect to accidental eccentricity is not considered.

The inherent amplification factors are automatically set to 0 when torsional amplification effect to inherent eccentricity is not considered.

The inherent amplification factors are all set to 'the input value - 1.0'. (This is to exclude the true inherent torsion)

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** Story Force , Seismic Force x Scale Factor + Added Force

SEISMIC LOAD GENERATION DATA X-DIRECTION

STORY NAME	STORY WEIGHT	STORY LEVEL	SEISMIC FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN. MOMENT	ACCIDENT. TORSION	INHERENT TORSION	TOTAL TORSION
Roof	8918.278	20.0	2557.16	0.0	2557.16	0.0	0.0	4243.261	0.0	4243.261
11F	108.7832	17.8	27.76059	0.0	27.76059	2557.16	5625.752	1.457431	0.0	1.457431
10F	3034.456	16.9	735.2151	0.0	735.2151	2584.92	7952.18	448.4812	0.0	448.4812
9F	7502.837	15.6	1678.02	0.0	1678.02	3320.136	12268.36	2784.447	0.0	2784.447
8F	108.7832	14.7	22.92588	0.0	22.92588	4998.155	16766.7	1.203609	0.0	1.203609
7F	3019.781	13.8	597.4499	0.0	597.4499	5021.081	21285.67	364.4444	0.0	364.4444
6F	7380.322	11.7	1237.964	0.0	1237.964	5618.531	33084.58	2054.234	0.0	2054.234
5F	2988.009	10.8	462.6499	0.0	462.6499	6856.495	39255.43	282.2164	0.0	282.2164
4F	106.2649	8.7	13.25427	0.0	13.25427	7319.145	54625.63	0.0	0.0	0.0
3F	13355.11	7.8	1493.444	0.0	1493.444	7332.399	61224.79	2478.168	0.0	2478.168
2F	9906.222	3.9	553.8849	0.0	553.8849	8825.843	95645.58	919.0972	0.0	919.0972
G.L.	—	0.0	—	—	—	9379.728	132226.5	—	—	—

SEISMIC LOAD GENERATION DATA Y-DIRECTION

STORY NAME	STORY WEIGHT	STORY LEVEL	SEISMIC FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN. MOMENT	ACCIDENT. TORSION	INHERENT TORSION	TOTAL TORSION
Roof	8918.278	20.0	2557.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11F	108.7832	17.8	27.76059	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10F	3034.456	16.9	735.2151	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9F	7502.837	15.6	1678.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8F	108.7832	14.7	22.92588	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7F	3019.781	13.8	597.4499	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6F	7380.322	11.7	1237.964	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5F	2988.009	10.8	462.6499	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4F	106.2649	8.7	13.25427	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3F	13355.11	7.8	1493.444	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2F	9906.222	3.9	553.8849	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G.L.	—	0.0	—	—	—	0.0	0.0	—	—	—

COMMENTS ABOUT TORSION

If torsional amplification effects are considered :

Accidental Torsion , Story Force * Accidental Eccentricity * Amp. Factor for Accidental Eccentricity
Inherent Torsion , Story Force * Inherent Eccentricity * Amp. Factor for Inherent Eccentricity

If torsional amplification effects are not considered :

Accidental Torsion , Story Force * Accidental Eccentricity
Inherent Torsion , 0

The inherent torsion above is the additional torsion due to torsional amplification effect.

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The true inherent torsion is considered automatically in analysis stage when the seismic force is applied to the structure.

* MASS GENERATION DATA FOR LATERAL ANALYSIS OF BUILDING [UNIT: kN, m]

STORY NAME	TRANSLATIONAL MASS (X-DIR)	TRANSLATIONAL MASS (Y-DIR)	ROTATIONAL MASS	CENTER OF MASS (X-COORD)	CENTER OF MASS (Y-COORD)
Roof	909.471553	909.471553	271499.821	34.2499	10.5650425
11F	11.0935353	11.0935353	705.803288	14.1188663	9.2
10F	309.448898	309.448898	23378.1125	13.7621296	5.35141187
9F	765.127202	765.127202	123885.731	42.3206297	12.4948291
8F	11.0935353	11.0935353	705.803288	14.1188663	9.2
7F	307.952426	307.952426	23240.6452	13.74952	5.34522502
6F	752.63331	752.63331	129998.623	41.8379005	12.4405234
5F	304.71227	304.71227	22994.986	13.7294384	5.32472567
4F	10.8367183	10.8367183	687.688735	14.084186	9.2
3F	1361.93221	1361.93221	491522.513	32.1542533	10.6910066
2F	1010.22046	1010.22046	338010.754	27.636176	7.07158608
1F	0.0	0.0	0.0	0.0	0.0
TOTAL :	5754.52212	5754.52212			

* ADDITIONAL MASSES FOR THE CALCULATION OF EQUIVALENT SEISMIC FORCE

Note. The following masses are between two adjacent stories or on the nodes released from floor rigid diaphragm by *Diaphragm Disconnect command. The masses are proportionally distributed to upper/lower stories according to their vertical locations. For dynamic analysis, however, floor masses and masses on vertical elements remain at their original locations.

STORY NAME	TRANSLATIONAL MASS (X-DIR)	TRANSLATIONAL MASS (Y-DIR)
Roof	0.0	0.0
11F	0.0	0.0
10F	0.0	0.0
9F	0.0	0.0
8F	0.0	0.0
7F	0.0	0.0
6F	0.0	0.0
5F	0.0	0.0
4F	0.0	0.0
3F	0.0	0.0
2F	0.0	0.0
1F	222.590871	222.590871
TOTAL :	222.590871	222.590871

* EQUIVALENT SEISMIC LOAD IN ACCORDANCE WITH KOREAN BUILDING CODE (KDS(41-17-00:2019)) [UNIT: kN, m]

Seismic Zone	: 1
EPA (S)	: 0.22
Site Class	: S4
Acceleration-based Site Coefficient (Fa)	: 1.36000
Velocity-based Site Coefficient (Fv)	: 1.96000
Design Spectral Response Acc. at Short Periods (Sds)	: 0.49867

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Design Spectral Response Acc. at 1 s Period (Sd1) : 0.28747
 Seismic Use Group : II
 Importance Factor (Ie) : 1.00
 Seismic Design Category from Sds : C
 Seismic Design Category from Sd1 : D
 Seismic Design Category from both Sds and Sd1 : D
 Period Coefficient for Upper Limit (Cu) : 1.4125
 Fundamental Period Associated with X-dir. (Tx) : 0.4598
 Fundamental Period Associated with Y-dir. (Ty) : 0.4598
 Response Modification Factor for X-dir. (Rx) : 3.0000
 Response Modification Factor for Y-dir. (Ry) : 3.0000

 Exponent Related to the Period for X-direction (Kx) : 1.0000
 Exponent Related to the Period for Y-direction (Ky) : 1.0000

 Seismic Response Coefficient for X-direction (Csx) : 0.1662
 Seismic Response Coefficient for Y-direction (Csy) : 0.1662

 Total Effective Weight For X-dir. Seismic Loads (Wx) : 56428.843892
 Total Effective Weight For Y-dir. Seismic Loads (Wy) : 56428.843892

 Scale Factor For X-directional Seismic Loads : 0.00
 Scale Factor For Y-directional Seismic Loads : 1.00

 Accidental Eccentricity For X-direction (Ex) : Positive
 Accidental Eccentricity For Y-direction (Ey) : Positive

 Torsional Amplification for Accidental Eccentricity : Do not Consider
 Torsional Amplification for Inherent Eccentricity : Do not Consider

 Total Base Shear Of Model For X-direction : 0.000000
 Total Base Shear Of Model For Y-direction : 9379.727829
 Summation Of $W_i \cdot H_i^k$ Of Model For X-direction : 0.000000
 Summation Of $W_i \cdot H_i^k$ Of Model For Y-direction : 654249.435040

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ECCENTRICITY RELATED DATA

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STORY NAME	X - D I R E C T I O N A L L O A D				Y - D I R E C T I O N A L L O A D			
	ACCIDENTAL ECCENT.	INHERENT ECCENT.	ACCIDENTAL AMP.FACTOR	INHERENT AMP.FACTOR	ACCIDENTAL ECCENT.	INHERENT ECCENT.	ACCIDENTAL AMP.FACTOR	INHERENT AMP.FACTOR
Roof	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
11F	-0.0525	0.0	1.0	0.0	1.26	0.0	1.0	0.0
10F	-0.61	0.0	1.0	0.0	1.26	0.0	1.0	0.0
9F	-1.6593649	0.0	1.0	0.0	1.6239201	0.0	1.0	0.0
8F	-0.0525	0.0	1.0	0.0	1.26	0.0	1.0	0.0
7F	-0.61	0.0	1.0	0.0	1.26	0.0	1.0	0.0
6F	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
5F	-0.61	0.0	1.0	0.0	1.26	0.0	1.0	0.0
4F	0.0	0.0	1.0	0.0	1.26	0.0	1.0	0.0
3F	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
2F	-1.6593649	0.0	1.0	0.0	2.8964201	0.0	1.0	0.0
G.L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The accidental amplification factors are automatically set to 1.0 when torsional amplification effect to accidental eccentricity is not considered.

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The inherent amplification factors are automatically set to 0 when torsional amplification effect to inherent eccentricity is not considered.

The inherent amplification factors are all set to 'the input value - 1.0'. (This is to exclude the true inherent torsion)

★★ Story Force , Seismic Force x Scale Factor + Added Force

SEISMIC LOAD GENERATION DATA X-DIRECTION

STORY NAME	STORY WEIGHT	STORY LEVEL	SEISMIC FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN. MOMENT	ACCIDENT. TORSION	INHERENT TORSION	TOTAL TORSION
Roof	8918.278	20.0	2557.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11F	108.7832	17.8	27.76059	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10F	3034.456	16.9	735.2151	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9F	7502.837	15.6	1678.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8F	108.7832	14.7	22.92588	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7F	3019.781	13.8	597.4499	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6F	7380.322	11.7	1237.964	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5F	2988.009	10.8	462.6499	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4F	106.2649	8.7	13.25427	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3F	13355.11	7.8	1493.444	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2F	9906.222	3.9	553.8849	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G.L.	--	0.0	--	--	--	0.0	0.0	---	---	---

SEISMIC LOAD GENERATION DATA Y-DIRECTION

STORY NAME	STORY WEIGHT	STORY LEVEL	SEISMIC FORCE	ADDED FORCE	STORY FORCE	STORY SHEAR	OVERTURN. MOMENT	ACCIDENT. TORSION	INHERENT TORSION	TOTAL TORSION
Roof	8918.278	20.0	2557.16	0.0	2557.16	0.0	0.0	7406.609	0.0	7406.609
11F	108.7832	17.8	27.76059	0.0	27.76059	2557.16	5625.752	34.97835	0.0	34.97835
10F	3034.456	16.9	735.2151	0.0	735.2151	2584.92	7952.18	926.371	0.0	926.371
9F	7502.837	15.6	1678.02	0.0	1678.02	3320.136	12268.36	2724.97	0.0	2724.97
8F	108.7832	14.7	22.92588	0.0	22.92588	4998.155	16766.7	28.88661	0.0	28.88661
7F	3019.781	13.8	597.4499	0.0	597.4499	5021.081	21285.67	752.7869	0.0	752.7869
6F	7380.322	11.7	1237.964	0.0	1237.964	5618.531	33084.58	3585.664	0.0	3585.664
5F	2988.009	10.8	462.6499	0.0	462.6499	6856.495	39255.43	582.9389	0.0	582.9389
4F	106.2649	8.7	13.25427	0.0	13.25427	7319.145	54625.63	16.70038	0.0	16.70038
3F	13355.11	7.8	1493.444	0.0	1493.444	7332.399	61224.79	4325.64	0.0	4325.64
2F	9906.222	3.9	553.8849	0.0	553.8849	8825.843	95645.58	1604.283	0.0	1604.283
G.L.	--	0.0	--	--	--	9379.728	132226.5	---	---	---

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COMMENTS ABOUT TORSION

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If torsional amplification effects are considered :

Accidental Torsion , Story Force * Accidental Eccentricity * Amp. Factor for Accidental Eccentricity
Inherent Torsion , Story Force * Inherent Eccentricity * Amp. Factor for Inherent Eccentricity

If torsional amplification effects are not considered :

Accidental Torsion , Story Force * Accidental Eccentricity

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Inherent Torsion , 0

The inherent torsion above is the additional torsion due to torsional amplification effect.
 The true inherent torsion is considered automatically in analysis stage when the seismic force is applied to the structure.

2. 하 중 산 정

2.0 하중산정

1. 옥탑 옥상 바닥 (의사숙소)

재료	두께 (cm)	단위하중 (kN/ m ² /cm)	합계 (kN/ m ²)
누름콘크리트	7.00	·	1.60
방수 및 고름모르타르	2.00	·	0.40
슬래브	15.0	0.24	3.60
천정마감	·	·	0.20

SUMMARY

DEAD LOAD TOTAL = 5.80 kN/ m²

LIVE LOAD TOTAL = 2.00 kN/ m²

1.4D.L = 8.12 kN/ m²

1.2D.L + 1.6L.L = 10.16 kN/ m²

2. 계단실 (의사숙소)

재료	두께 (cm)	단위하중 (kN/ m ² /cm)	합계 (kN/ m ²)
돌갈기	·	·	0.80
모르타르	4.00	·	0.80
슬래브	18.5	0.24	4.44
천정마감	·	·	0.20

SUMMARY

DEAD LOAD TOTAL = 6.24 kN/ m²

LIVE LOAD TOTAL = 3.00 kN/ m²

1.4D.L = 8.74 kN/ m²

1.2D.L + 1.6L.L = 12.29 kN/ m²

3. 옥상바닥 (의사숙소)

재료	두께 (cm)	단위하중 (kN/ m ² /cm)	합계 (kN/ m ²)
누름콘크리트	7.00	·	1.60
방수 및 고름모르타르	2.00	·	0.40
슬래브	15.0	0.24	3.60
천정마감	·	·	0.20

SUMMARY

DEAD LOAD TOTAL = 5.80 kN/ m²

LIVE LOAD TOTAL = 2.00 kN/ m²

1.4D.L = 8.12 kN/ m²

1.2D.L + 1.6L.L = 10.16 kN/ m²

4. 4~2층 숙소 (의사숙소)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
판넬	12.0	.	2.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 5.80 kN/m²

LIVE LOAD TOTAL = 2.00 kN/m²

1.4D.L = 8.12 kN/m²

1.2D.L + 1.6L.L = 10.16 kN/m²

5. 4~2층 화장실 (의사숙소)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
타일마감	1.20	.	0.24
모르타르 및 방수	2.00	.	0.40
칸막이 벽체	.	.	1.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 5.44 kN/m²

LIVE LOAD TOTAL = 2.00 kN/m²

1.4D.L = 7.62 kN/m²

1.2D.L + 1.6L.L = 9.73 kN/m²

6. 4~2층 복도/홀

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
돌 깔기	.	.	0.80
모르타르	2.00	.	2
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 5.00 kN/m²

LIVE LOAD TOTAL = 3.00 kN/m²

1.4D.L = 7.00 kN/m²

1.2D.L + 1.6L.L = 10.80 kN/m²

7. 2층 휴게공간 (의사숙소)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
식재용경량토	60.0	.	5.40
누름콘크리트	7.00		1.60
방수 및 고름모르타르	2.00	.	0.40
슬래브	15.0	0.24	3.60
천정마감	.	.	0.30

SUMMARY

DEAD LOAD TOTAL = 11.30 kN/m²

LIVE LOAD TOTAL = 2.00 kN/m²

1.4D.L = 15.82 kN/m²

1.2D.L + 1.6L.L = 16.76 kN/m²

8. 1층 주차장/주차통로 (의사숙소)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
무근콘크리트	10.00		2.30
방수 및 고름모르타르	2.00	.	0.40
슬래브	20.0	0.24	4.80
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 7.70 kN/m²

LIVE LOAD TOTAL = 5.00 kN/m²

1.4D.L = 10.78 kN/m²

1.2D.L + 1.6L.L = 17.24 kN/m²

1. 옥탑 옥상 바닥 (장례식장)

재료	두께 (cm)	단위하중 (kN/㎡/cm)	합계 (kN/㎡)
누름콘크리트	7.00	·	1.60
방수 및 고름모르타르	2.00	·	0.40
슬래브	15.0	0.24	3.60
천정마감	·	·	0.20

SUMMARY

DEAD LOAD TOTAL = 5.80 kN/㎡

LIVE LOAD TOTAL = 2.00 kN/㎡

1.4D.L = 8.12 kN/㎡

1.2D.L + 1.6L.L = 10.16 kN/㎡

2. 계단실 (장례식장)

재료	두께 (cm)	단위하중 (kN/㎡/cm)	합계 (kN/㎡)
돌 깔기	·	·	0.80
모르타르	4.00	·	0.80
슬래브	18.5	0.24	4.44
천정마감	·	·	0.20

SUMMARY

DEAD LOAD TOTAL = 6.24 kN/㎡

LIVE LOAD TOTAL = 3.00 kN/㎡

1.4D.L = 8.74 kN/㎡

1.2D.L + 1.6L.L = 12.29 kN/㎡

3. 옥상바닥 (장례식장)

재료	두께 (cm)	단위하중 (kN/㎡/cm)	합계 (kN/㎡)
누름콘크리트	7.00	·	1.60
방수 및 고름모르타르	2.00	·	0.40
슬래브	15.0	0.24	3.60
천정마감	·	·	0.20

SUMMARY

DEAD LOAD TOTAL = 5.80 kN/㎡

LIVE LOAD TOTAL = 2.00 kN/㎡

1.4D.L = 8.12 kN/㎡

1.2D.L + 1.6L.L = 10.16 kN/㎡

4. 3~2층 홀/조문객실 (장례식장)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
바닥마감	.	.	1.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 4.80 kN/m²

LIVE LOAD TOTAL = 3.00 kN/m²

1.4D.L = 6.72 kN/m²

1.2D.L + 1.6L.L = 10.56 kN/m²

5. 3~2층 화장실 (장례식장)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
타일마감	1.20	.	0.24
모르타르 및 방수	2.00	.	0.40
칸막이 벽체	.	.	1.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 5.44 kN/m²

LIVE LOAD TOTAL = 2.00 kN/m²

1.4D.L = 7.62 kN/m²

1.2D.L + 1.6L.L = 9.73 kN/m²

6. 1층 홀/조문객실 (장례식장)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
바닥마감	.	.	1.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 4.80 kN/m²

LIVE LOAD TOTAL = 3.50 kN/m²

1.4D.L = 6.72 kN/m²

1.2D.L + 1.6L.L = 11.36 kN/m²

7. 1층 화장실바닥 (장례식장)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
타일마감	1.20	.	0.24
모르타르 및 방수	4.00	.	0.80
칸막이 벽체	.	.	1.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

DEAD LOAD TOTAL = 5.84 kN/m²

LIVE LOAD TOTAL = 2.00 kN/m²

1.4D.L = 8.18 kN/m²

1.2D.L + 1.6L.L = 10.21 kN/m²

8. 1층 ELV홀/로비 (장례식장)

재료	두께 (cm)	단위하중 (kN/m ² /cm)	합계 (kN/m ²)
바닥마감	.	.	1.00
슬래브	15.0	0.24	3.60
천정마감	.	.	0.20

SUMMARY

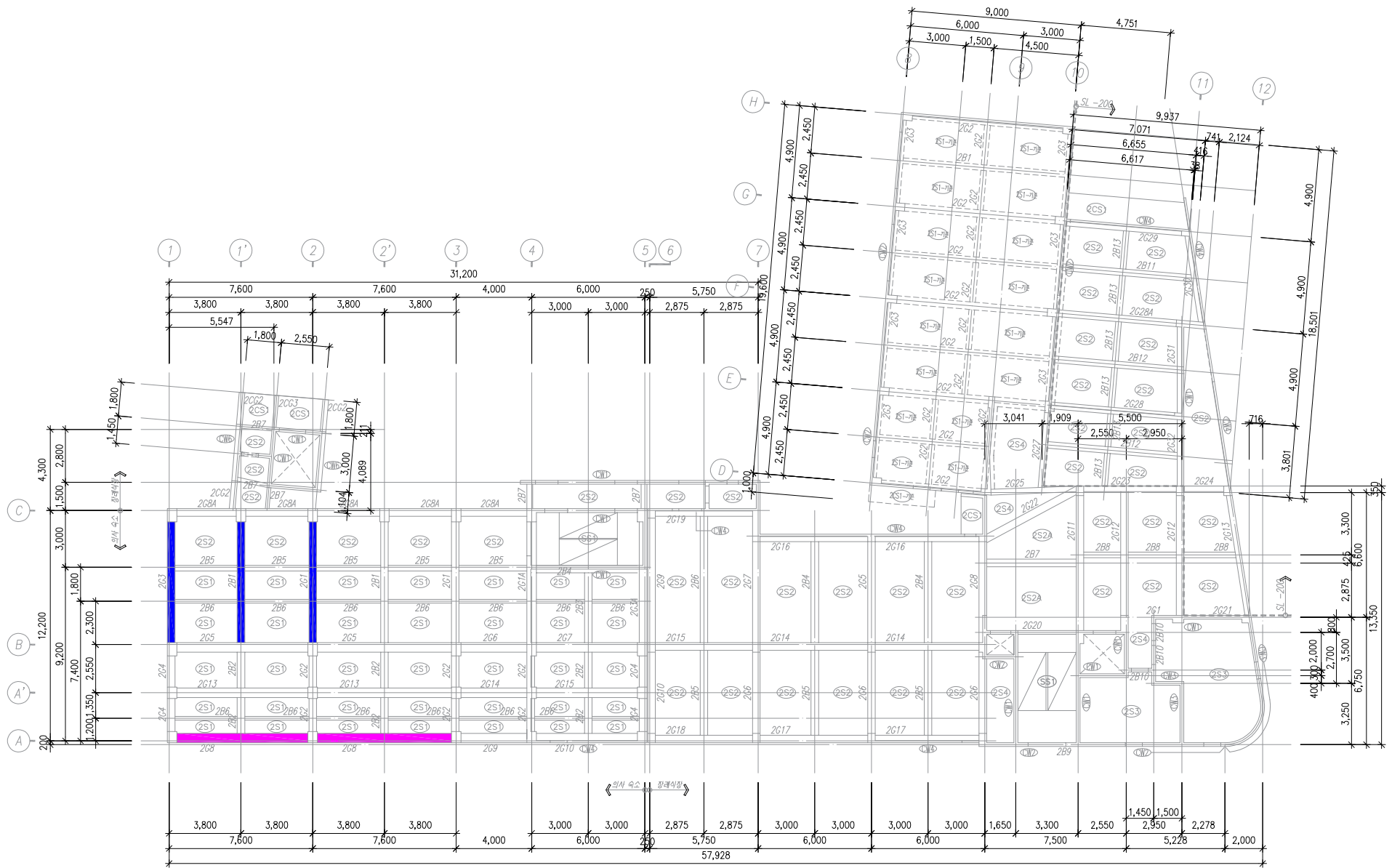
DEAD LOAD TOTAL = 4.80 kN/m²

LIVE LOAD TOTAL = 3.00 kN/m²

1.4D.L = 6.72 kN/m²

1.2D.L + 1.6L.L = 10.56 kN/m²

3. 보강위치도 및 보강상세도



보강위치도
(지상2층 바닥구조평면도)

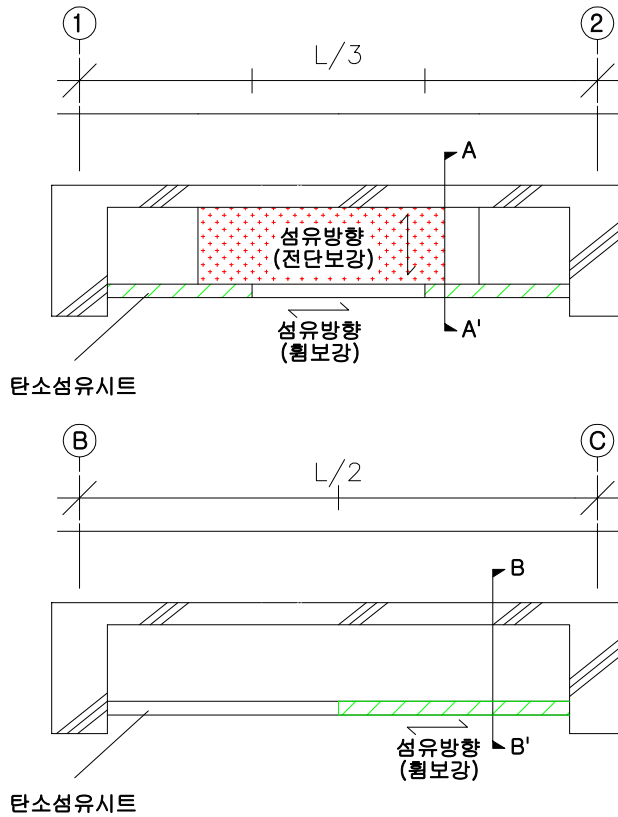
보 전단+휨보강		2EA
보 휨보강		3EA

 (주)에스엔구조 대구광역시 동구 이노밸리로28길 23, 효성빌딩 401호(라산동) 전화 : (053) 383-3312 팩스 : (053) 289-3314 E-mail: 3833312@naver.com	사업명칭 PROJECT TITLE 김천의료원 증축	도면명 NAME OF DRAWING 보강위치도	Note.	도면번호 DRAWING NO.
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·REPAIR & REHABILITATION DRAWING.

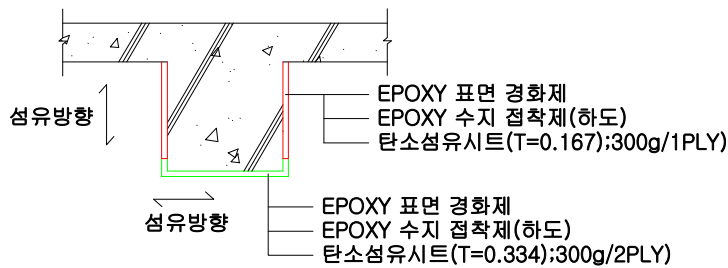
SUBJECT 보 보강방안 - 탄소섬유시트

측면상세도

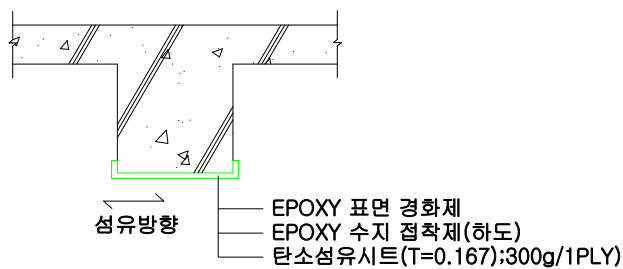


단면상세도

SECTION A-A'



SECTION B-B'



보 강 순 서

* 보 보강순서

1. 바탕면처리
2. EPOXY표면 경화제
프라이머 도포
3. 하지접착보강 및 레진 하도
4. 탄소섬유 접착(1PLY)
5. 시공완료

- 보강순서는
A 휨모멘트 보강후,
B 전단보강을 한다.

- 보강재료는
탄소섬유시트
300g(T=0.167)/1PLY
300g(T=0.334)/2PLY



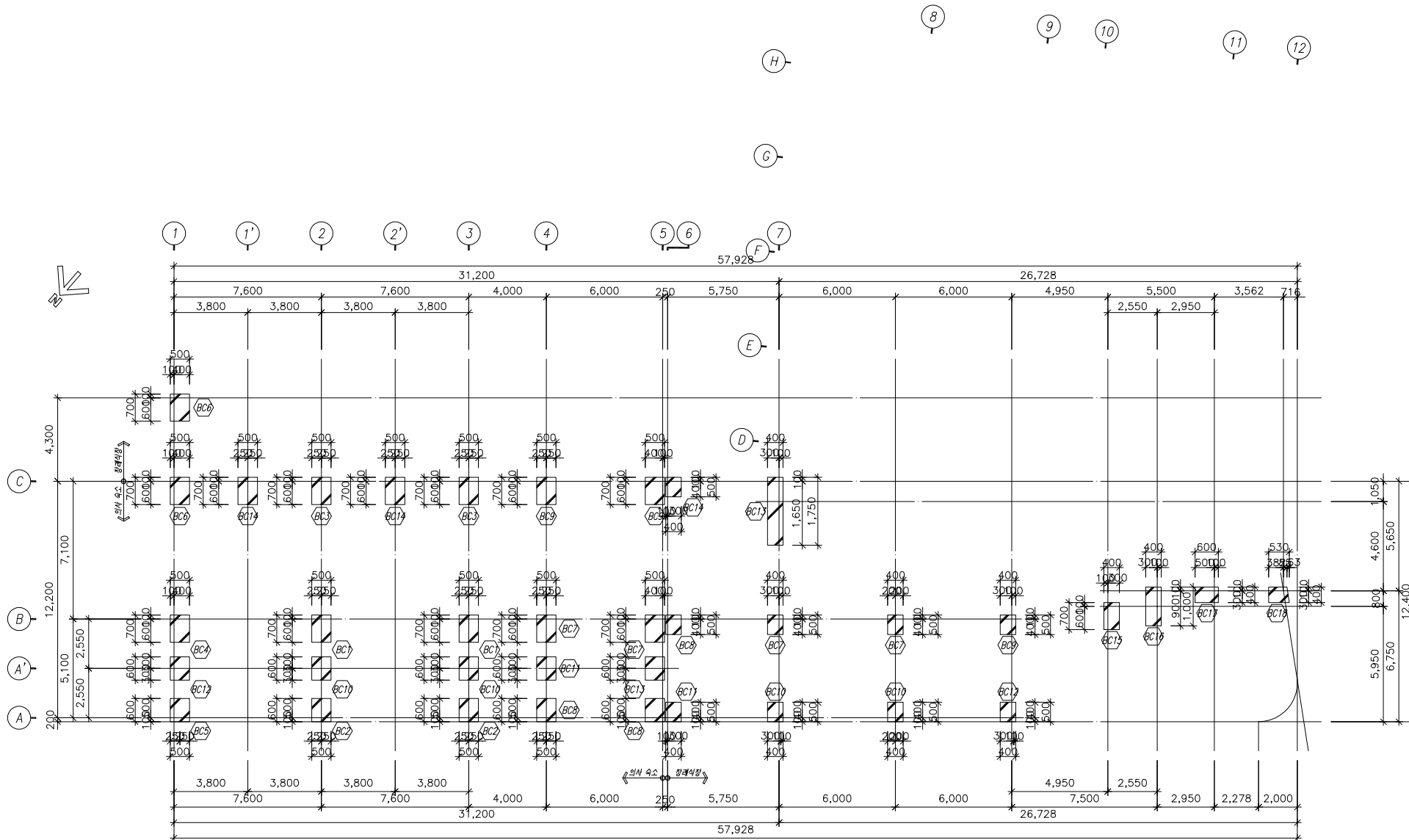
(주)에스엠구조

대구광역시 동구 이노밸리로26길 23, 효성빌딩 401호(각산동)
전화 : (053) 383-3312
팩스 : (053) 289-3314
E-mail: 3833312@naver.com

보 강 상 세

ΔΩΓ. NO.

4. 기존구조도면 및 배근도



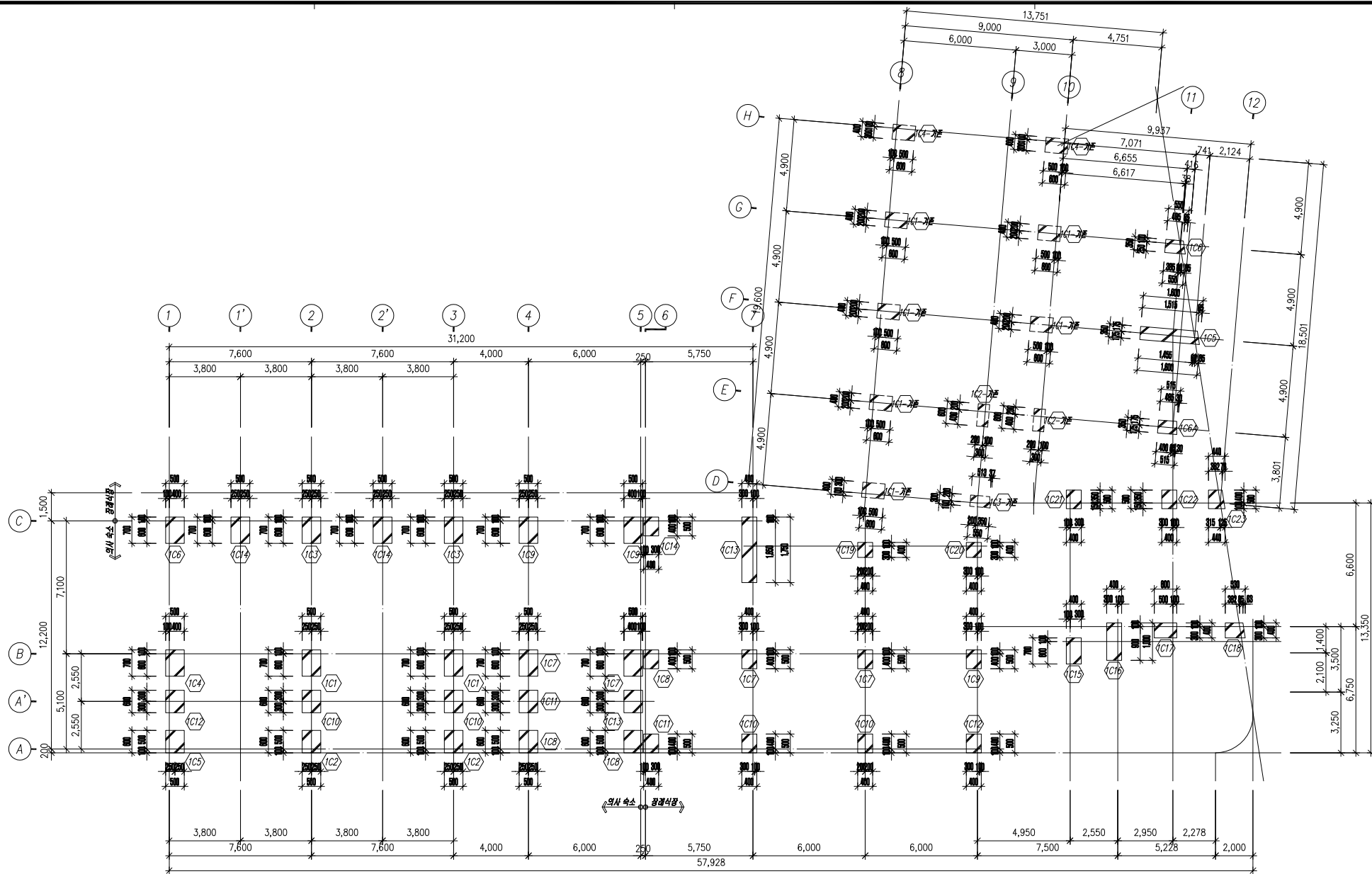
지하1층 기동 주심도
SCALE : 1/200



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신읍동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장례식장 & 의사숙소 증축공사	A1: 1/ 100 A3: 1/ 200	APPROVED BY	CHECKED BY 김 구 진	S - 203
			DRAWING TITLE				SHEET NO.
			지하1층 기동 주심도				-



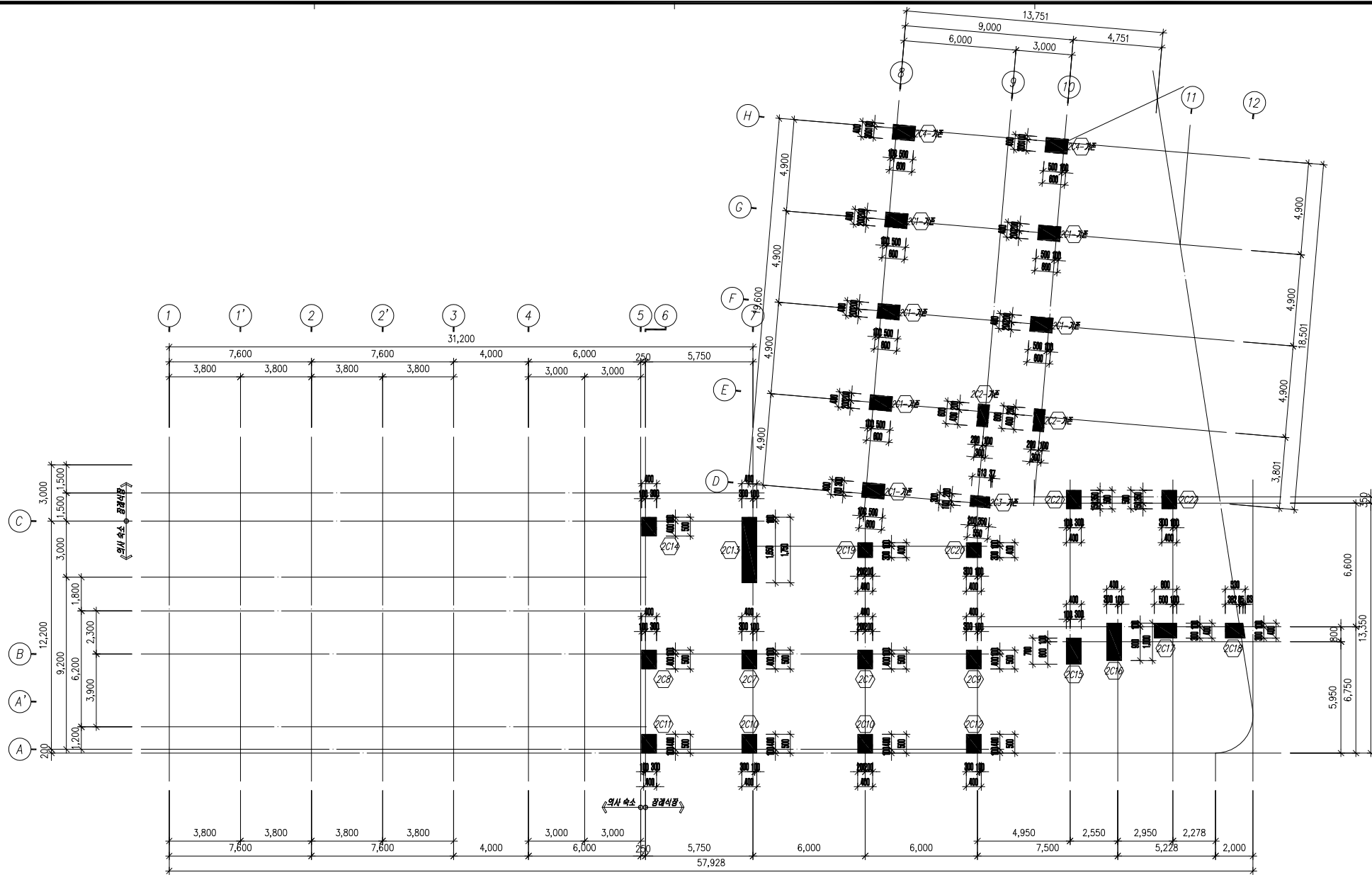
지상1층 기동 주심도
SCALE : 1/200



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장예식장&의사소증축공사	A1: 1/ 100			S - 204
			DRAWING TITLE	A3: 1/ 200	APPROVED BY	CHECKED BY	SHEET NO.
			지상1층 기동 주심도			김구진	-



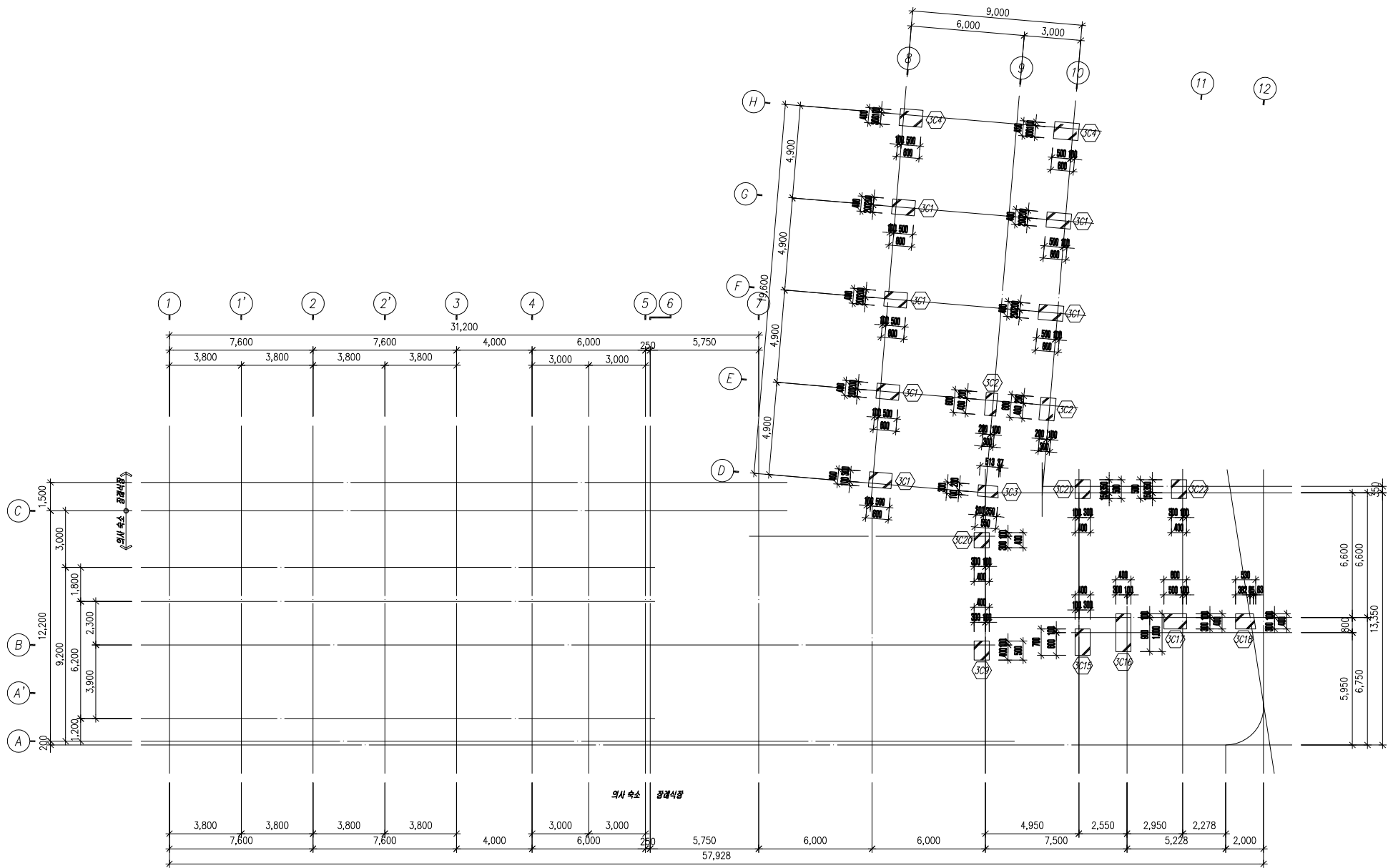
지상2층 기동 주심도
SCALE : 1/200



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ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

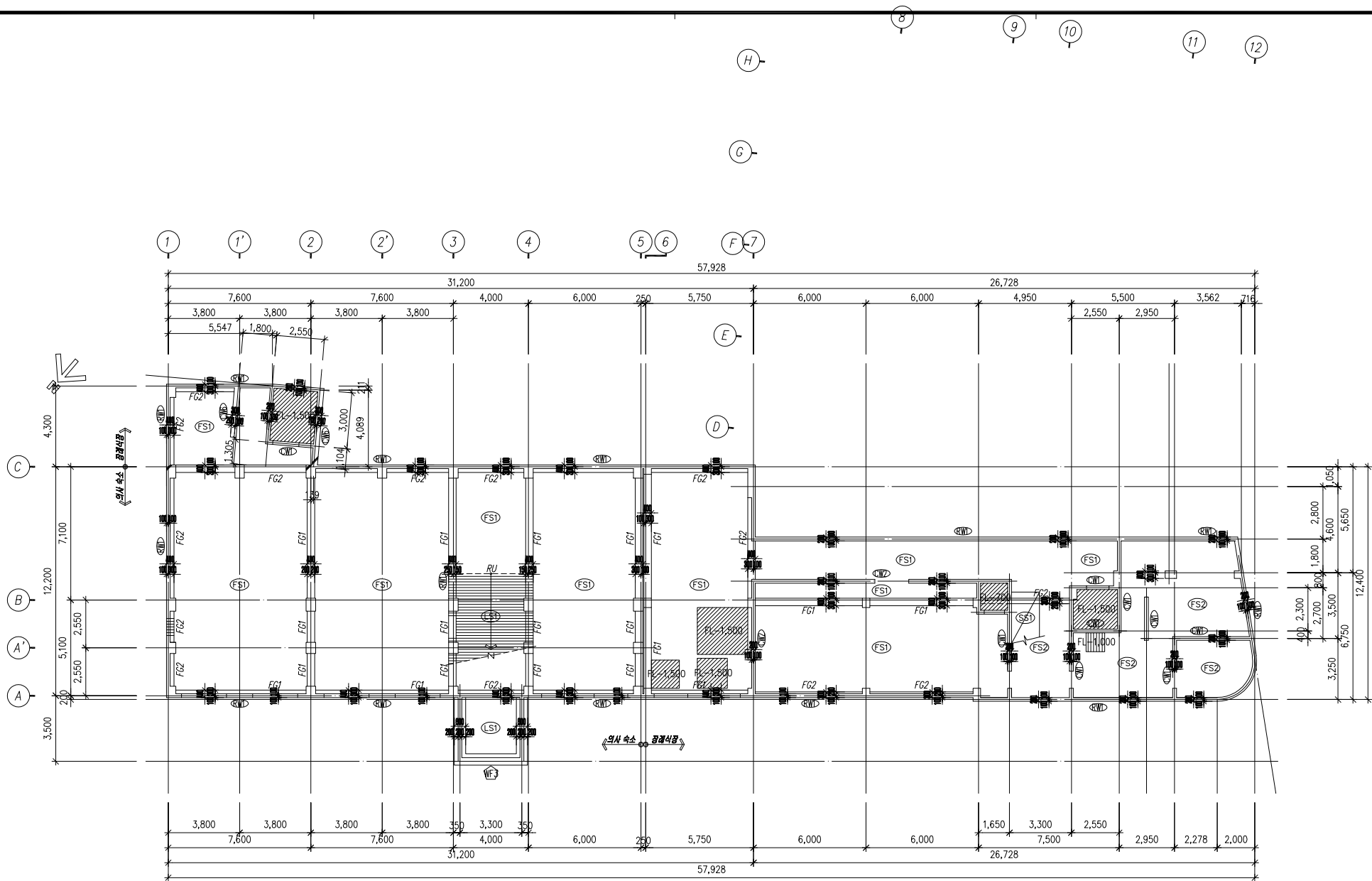
SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장계식장&의사숙소증축공사	A1: 1/ 100			S - 205
			DRAWING TITLE	A3: 1/ 200	APPROVED BY	CHECKED BY	SHEET NO.
			지상2층 기동 주심도			김구진	-



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ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .					-
			DRAWING TITLE	A1: 1/ A3: 1/	APPROVED BY	CHECKED BY 건축사	SHEET NO. -



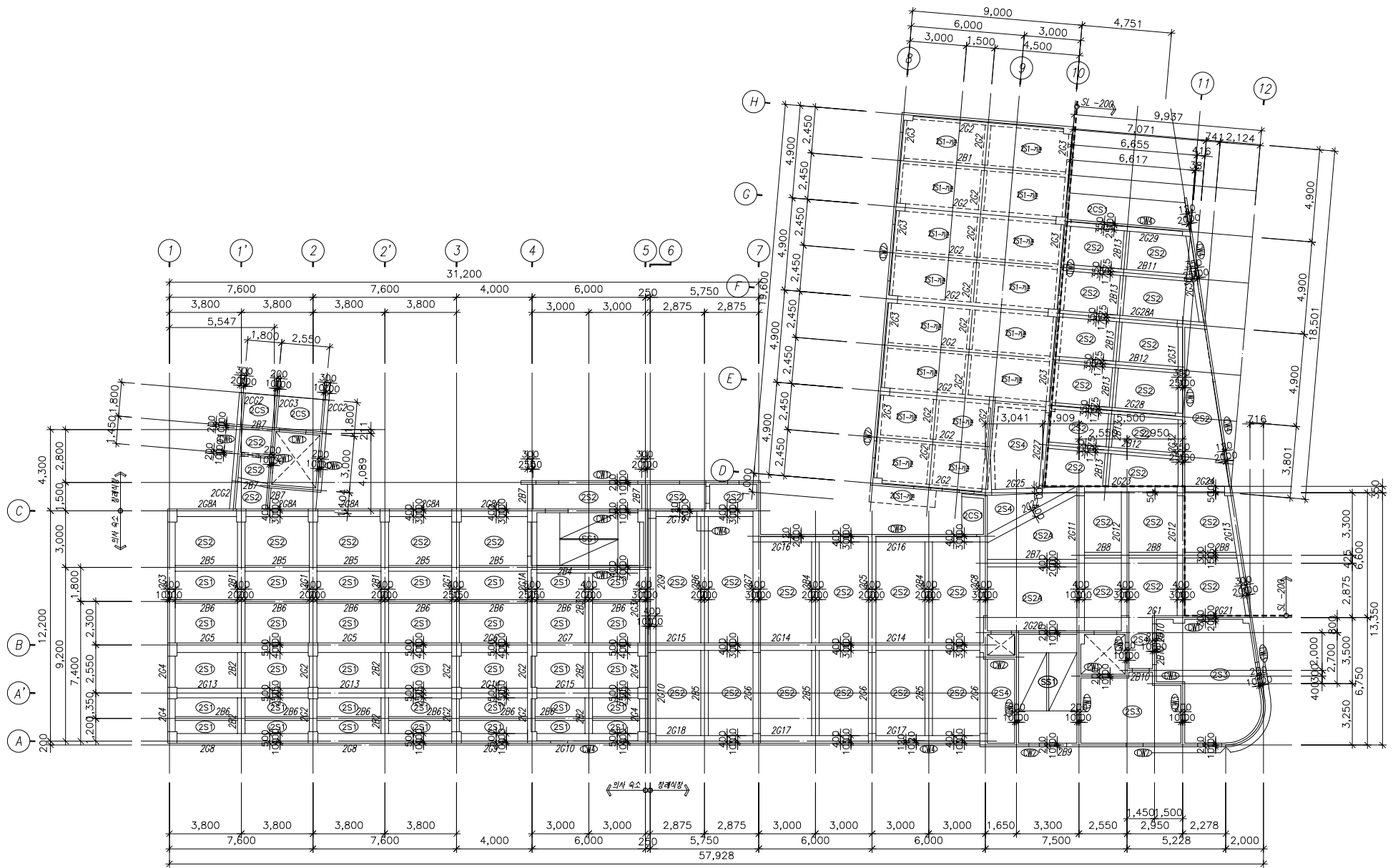
지하1층 바닥 구조도
SCALE : 1/200



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장래식장&의사소중축공사				S - 303
			DRAWING TITLE	A1: 1/ 100 A3: 1/ 200	APPROVED BY	CHECKED BY 건축사	SHEET NO. -
			지하1층 바닥 구조도			김구진	



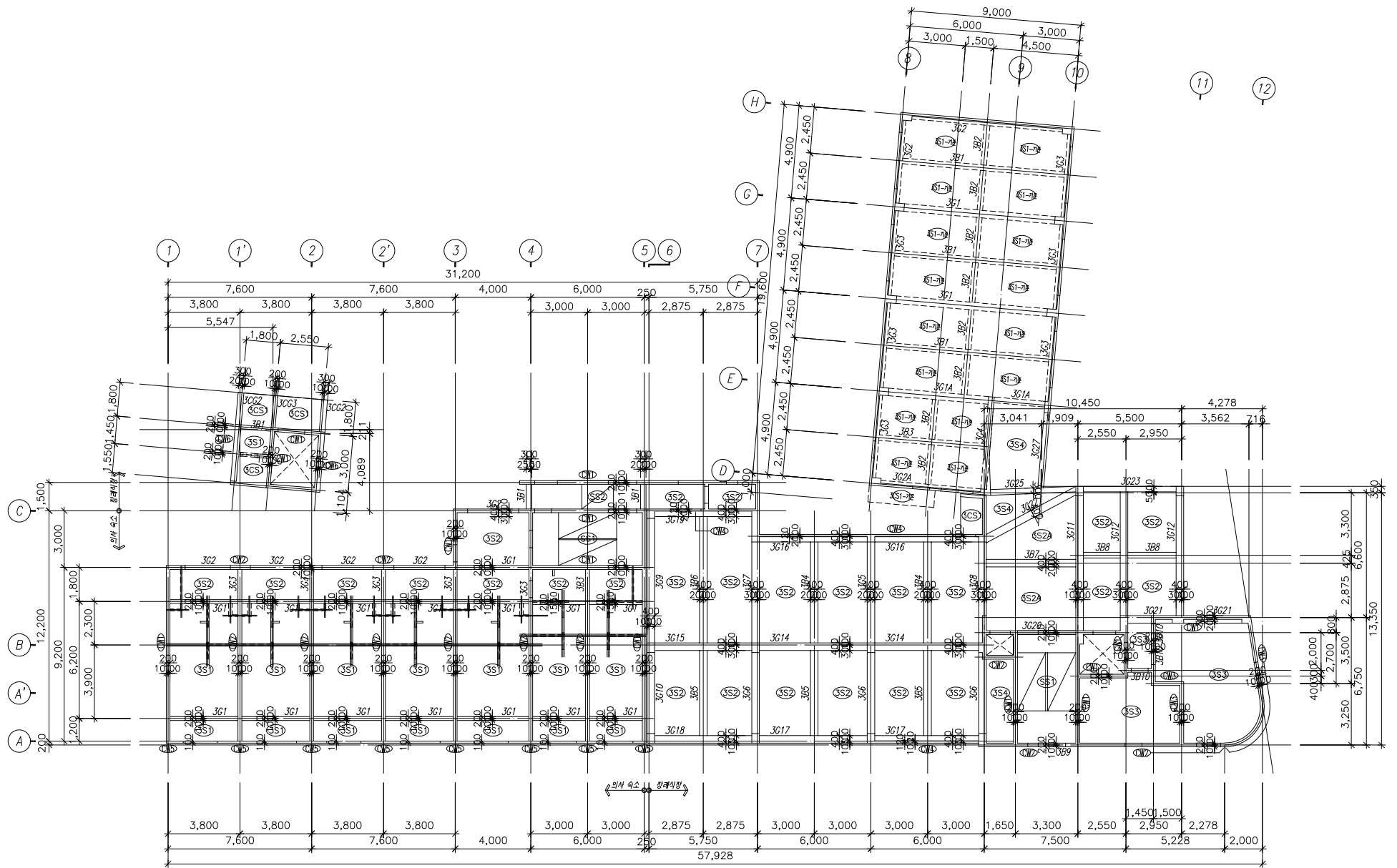
지상 2층 바닥 구조도
SCALE : 1/200



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장례식장 & 의사숙소 증축공사	A1: 1/ 100 A3: 1/ 200			S - 305
			DRAWING TITLE	APPROVED BY	CHECKED BY	SHEET NO.	
			지상 2층 바닥 구조도		김구진	-	



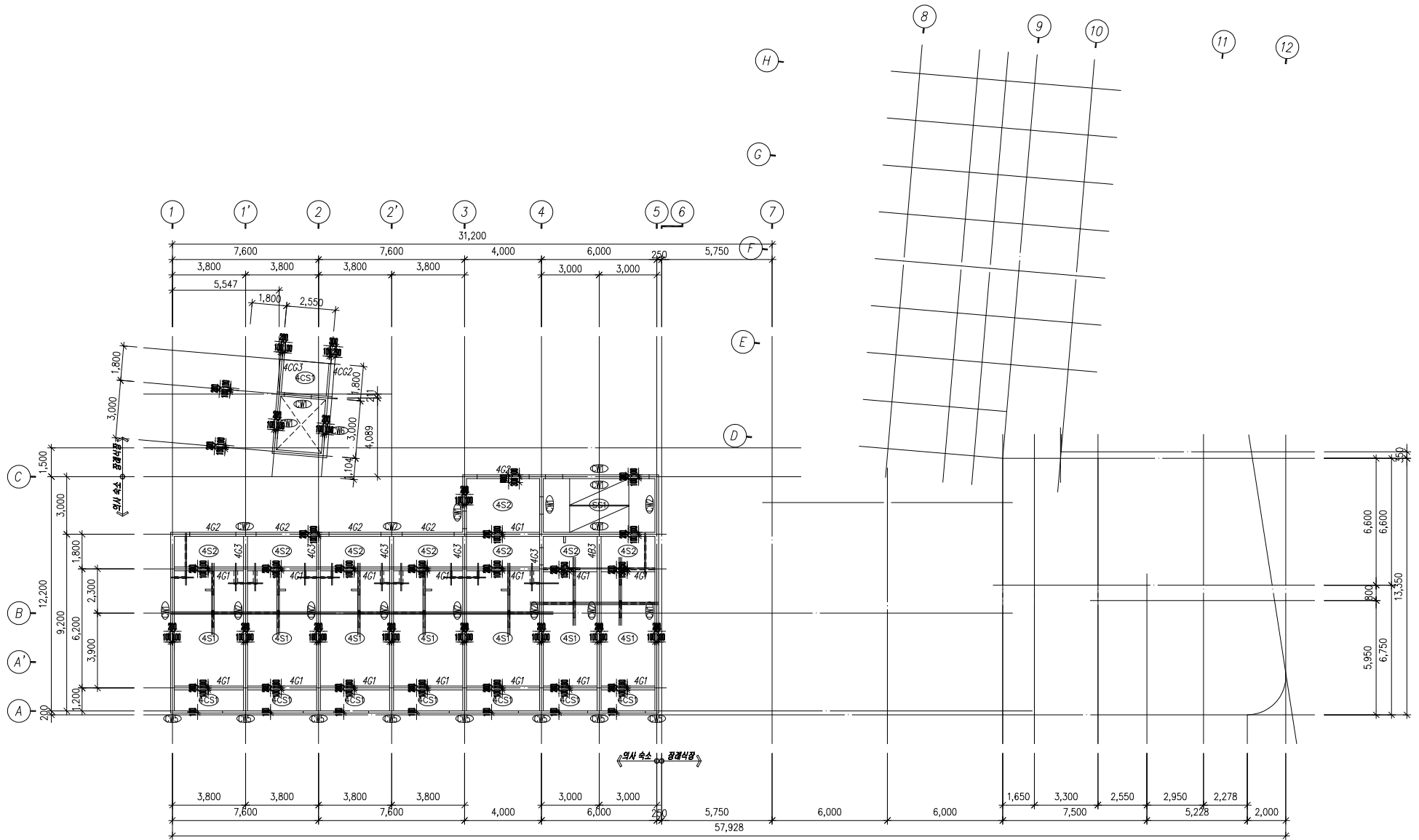
지상 3층 바닥 구조도
SCALE : 1/200



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ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신읍동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

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		200 . . .	김천의료원장례식장 및 의사숙소 증축공사	A1: 1/ 100			S - 306
			DRAWING TITLE	A3: 1/ 200	APPROVED BY	CHECKED BY	SHEET NO.
			지상 3층 바닥 구조도			김 구 진	-



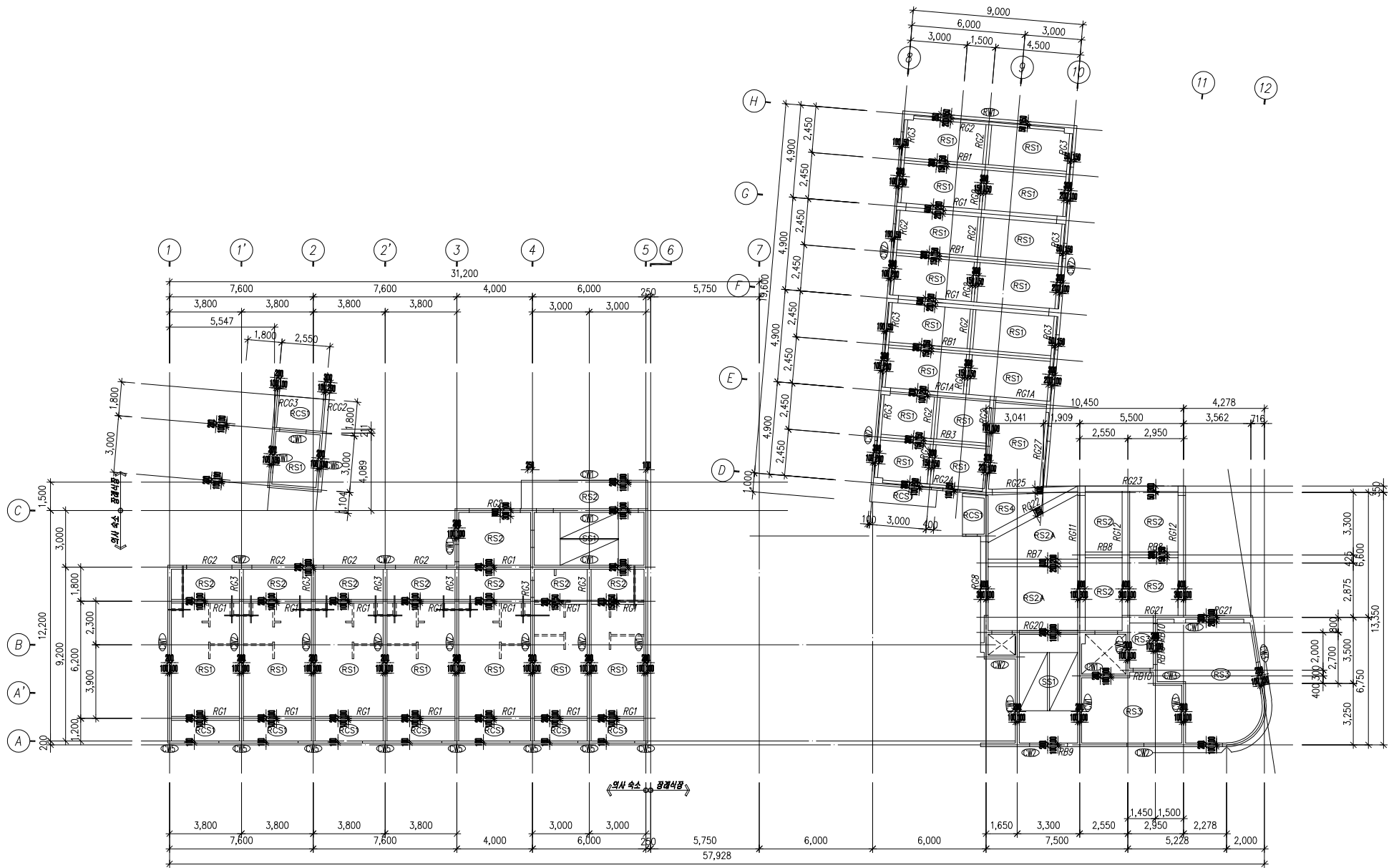
지상4층 바닥 구조도
SCALE : 1/200



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ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장례식장&의사속소증축공사				S - 307
			DRAWING TITLE	A1: 1/ 100 A3: 1/ 200	APPROVED BY	CHECKED BY 건축사	SHEET NO. -
			지상4층 바닥 구조도			김구진	



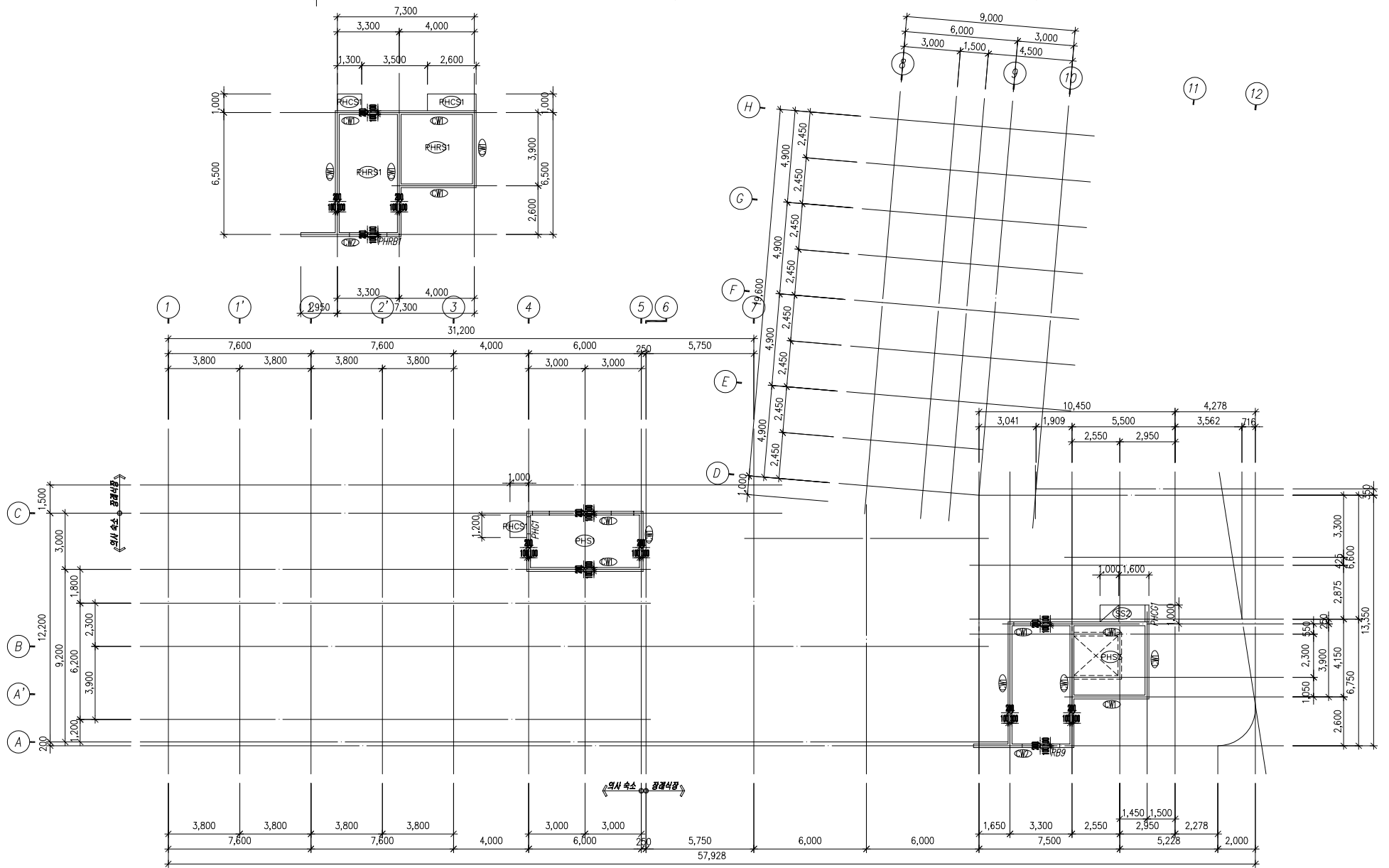
옥상층 바닥 구조도
SCALE : 1/200



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장계식장&의사소조중축공사	A1: 1/ 100			S - 308
			DRAWING TITLE	A3: 1/ 200	APPROVED BY	CHECKED BY	SHEET NO.
			옥상층 바닥 구조도			김 구 진	-



옥탑층 바닥 구조도
SCALE : 1/200



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장계식장&의사숙소증축공사	A1: 1/ 100			S - 309
			DRAWING TITLE	A3: 1/ 200	APPROVED BY	CHECKED BY	SHEET NO.
			옥탑층 바닥 구조도			김구진	-

■ 의사 숙소 기둥 일람표

부재명	BC1	BC2	BC3	BC4	BC5	BC6	BC7
부재단면							
부재크기	500 X 700	500 X 600	500 X 700	500 X 700	500 X 600	500 X 700	500 X 700
MAIN BAR	12 - HD22	12 - HD22	12 - HD22	12 - HD22	12 - HD22	12 - HD22	12 - HD22
TIE BARS	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300
CROSS TIES	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300
기둥상하 L/4 구간 HOOP	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150
부재명	BC8	BC9	BC10	BC11	BC12	BC13	BC14
부재단면							
부재크기	500 X 600	500 X 700	500 X 600	500 X 600	500 X 600	500 X 600	500 X 700
MAIN BAR	12 - HD22	12 - HD22	12 - HD22	12 - HD22	12 - HD22	12 - HD22	12 - HD22
TIE BARS	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300
CROSS TIES	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300	HD10 @ 300
기둥상하 L/4 구간 HOOP	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150	HD10 @ 150
부재명	1C1	1C2	1C3	1C4	1C5	1C6	1C7
부재단면							
부재크기	500 X 700	500 X 600	500 X 700	500 X 700	500 X 600	500 X 700	500 X 700
MAIN BAR	20 - HD22	18 - HD22	18 - HD22	20 - HD22	18 - HD22	18 - HD22	20 - HD22
TIE BARS	HD13 @ 250	HD10 @ 250	HD13 @ 250	HD13 @ 250	HD10 @ 250	HD10 @ 250	HD13 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	1C8	1C9	1C10	1C11	1C12	1C13	1C14
부재단면							
부재크기	500 X 600	500 X 700	500 X 600	500 X 600	500 X 600	500 X 600	500 X 700
MAIN BAR	16 - HD22	18 - HD22	18 - HD22	14 - HD22	18 - HD22	16 - HD22	20 - HD22
TIE BARS	HD10 @ 250	HD13 @ 250	HD10 @ 250	HD10 @ 250	HD13 @ 250	HD10 @ 250	HD13 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장례식장&의사숙소증축공사				S - 501
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY 건축사	SHEET NO.
			의사 숙소 기둥 일람표			김구진	-

■ 의사 숙소 보 일람표-1

부재명	FG1	FG2								
	ALL	ALL								
부재단면										
부재크기	400 X 600	400 X 600								
상부근	5-HD22	3-HD22								
하부근	5-HD22	3-HD22								
스터럽	HD13@150	HD13@250								
황보조건										
부재명	1G1		1G1A		1G2	1G3, 1G4	1G3A		1G3B	
	END	CENT	END	CENT	ALL	ALL	END	CENT	END	CENT
부재단면										
부재크기	400 X 600	400 X 600	500 X 500	500 X 500	400 X 600	400 X 700	500 X 500	500 X 500	400 X 700	400 X 700
상부근	5-HD22	3-HD22	9-HD22	5-HD22	3-HD22	3-HD22	7-HD22	3-HD22	3-HD22	3-HD22
하부근	3-HD22	5-HD22	5-HD22	7-HD22	3-HD22	3-HD22	5-HD22	5-HD22	3-HD22	3-HD22
스터럽	HD10@200	HD10@250	3-HD13@150	3-HD13@200	HD10@250	HD10@200	HD13@150	HD13@200	HD10@200	HD10@250
황보조건						2-HD13			2-HD13	2-HD13
부재명	1G4A		1G5		1G6		1G7		1G8	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 500	400 X 500	400 X 700	400 X 700	400 X 700	400 X 700	400 X 500	400 X 500	400 X 700	400 X 700
상부근	7-HD22	3-HD22	7-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22	3-HD22	3-HD22
하부근	5-HD22	5-HD22	3-HD22	5-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22	3-HD22
스터럽	HD13@150	HD13@200	HD10@150	HD10@200	HD10@200	HD10@250	HD13@200	HD13@200	HD10@200	HD10@250
황보조건			2-HD13	2-HD13	2-HD13	2-HD13			2-HD13	2-HD13

의사 숙소 보 일람표-1
 SCALE : 1/60



종합건축사사무소 금산(주)
 ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
 TEL. 434-2263, 434-2541, 436-8070
 FAX. 433-9478
 E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장래식장&의사숙소증축공사				S - 502
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 김 구 진	SHEET NO. -
			의사 숙소 보 일람표-1				

■ 의사 숙소 보 일람표-2

부재명	1G9		1G10		1G11		1G12		1G13	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 500	400 X 500
상부근	3-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22
하부근	3-HD22	3-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22	3-HD22	3-HD22	3-HD22
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@200
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13		
부재명	1B1			1B2	1B3		1B4		1B5	
	기동측	중앙부	내측	ALL	END	CENT	END	CENT	ALL	
부재단면										
부재크기	400 X 600	400 X 600	400 X 600	400 X 600	400 X 500	400 X 500	400 X 500	400 X 500	300 X 500	
상부근	7-HD22	3-HD22	5-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22	3-HD22	
하부근	3-HD22	5-HD22	3-HD22	3-HD22	3-HD22	3-HD22	3-HD22	5-HD22	3-HD22	
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@200	HD10@15	HD10@200	HD10@250	
황보조근										
부재명										
부재단면										
부재크기										
상부근										
하부근										
스터럽										
황보조근										


 의사 숙소 보 일람표-2
 SCALE : 1/60

■ 의사 숙소 보 일람표-3

부재명	2G1		2G1A		2G2		2G3		2G3A	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 800	400 X 800	400 X 800	400 X 800	400 X 700	400 X 700	400 X 700	400 X 700	400 X 900	400 X 900
상부근	10-HD22	3-HD22	12-HD22	5-HD22	5-HD22	5-HD22	7-HD22	3-HD22	10-HD22	5-HD22
하부근	5-HD22	7-HD22	5-HD22	12-HD22	3-HD22	3-HD22	3-HD22	7-HD22	5-HD22	10-HD22
스터럽	HD13@150	HD13@200	3-HD13@125	3-HD13@150	HD13@200	HD13@250	HD13@150	HD13@200	HD13@100	HD13@125
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13
부재명	2G4	2G5		2G6	2G7		2G8		2G8A	2G9
	ALL	END	CENT	ALL	END	CENT	END	CENT	ALL	ALL
부재단면										
부재크기	400 X 900	500 X 900	500 X 900	500 X 900	500 X 900	500 X 900	500 X 900	500 X 900	400 X 900	500 X 900
상부근	5-HD22	12-HD22	6-HD22	8-HD22	6-HD22	4-HD22	8-HD22	4-HD22	5-HD22	6-HD22
하부근	3-HD22	6-HD22	12-HD22	6-HD22	4-HD22	8-HD22	4-HD22	6-HD22	3-HD22	4-HD22
스터럽	HD13@250	HD13@125	HD13@150	HD13@250	HD13@150	HD13@200	HD13@150	HD13@200	HD13@250	HD13@200
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13
부재명	2G10		2G11	2G12		2G13		2G14	2G15	
	END	CENT	ALL	END	CENT	END	CENT	ALL	END	CENT
부재단면										
부재크기	500 X 900	500 X 900	400 X 900	400 X 900	400 X 900	500 X 900	500 X 900	500 X 900	500 X 900	500 X 900
상부근	6-HD22	4-HD22	5-HD22	5-HD22	3-HD22	8-HD22	4-HD22	6-HD22	6-HD22	4-HD22
하부근	4-HD22	6-HD22	3-HD22	3-HD22	5-HD22	4-HD22	8-HD22	4-HD22	4-HD22	6-HD22
스터럽	HD13@200	HD13@250	HD13@250	HD13@150	HD13@200	HD13@200	HD13@250	HD13@200	HD13@200	HD13@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13


 의사 숙소 보 일람표-3
 SCALE : 1/60



종합건축사사무소 금산(주)
 ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
 TEL. 434-2263, 434-2541, 436-8070
 FAX. 433-9478
 E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장래식장&의사숙소증축공사				S - 504
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY 김 구 진	SHEET NO. -
			의사 숙소 보 일람표-3				

■ 의사 숙소 보 일람표-4

부재명	2B1			2B2	2B3		2B4		2B5	2B6
	기동측	중앙부	내측	ALL	END	CENT	END	CENT	ALL	ALL
부재단면										
부재크기	400 X 800	400 X 800	400 X 800	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	300 X 500	200 X 500
상부근	12-HD22	5-HD22	7-HD22	5-HD22	5-HD22	3-HD22	5-HD22	3-HD22	3-HD22	4-HD16
하부근	5-HD22	8-HD22	5-HD22	3-HD22	3-HD22	5-HD22	3-HD22	7-HD22	3-HD22	4-HD16
스터럽	HD13@125	HD13@150	HD13@150	HD13@250	HD13@200	HD13@250	HD13@200	HD13@250	HD13@250	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13		
부재명	2B7									
	ALL									
부재단면										
부재크기	300 X 500									
상부근	3-HD19									
하부근	3-HD19									
스터럽	HD10@250									
황보조근										
부재명	3G1,4G1,RG1	3G2,4G2,RG2	3G3,4G3,RG3	3B1		PHG1				
	ALL	ALL	ALL	ALL		ALL				
부재단면										
부재크기	200 X 400	200 X 500	200 X 400	300 X 500		200 X 500				
상부근	4-HD16	2-HD16	4-HD16	3-HD19		4-HD16				
하부근	4-HD16	2-HD16	2-HD16	3-HD19		2-HD16				
스터럽	HD10@250	HD10@250	HD10@250	HD10@250		HD10@250				
황보조근										



의사 숙소 보 일람표-4

SCALE : 1/60

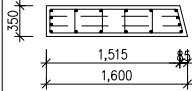
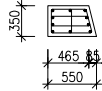
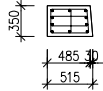


종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장계식장&의사숙소증축공사				S - 505
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			의사 숙소 보 일람표-4			김구진	

■ 장례식장 기둥 일람표-1

부재명	BC1	BC2	BC3	BC4			
부재단면	[기존]	[기존]	[기존]	[기존]			
부재크기							
MAIN BAR							
TIE BARS							
CROSS TIES							
기둥상하 L/4 구간 HOOP							
부재명	1C1	1C2	1C3	1C4	1C5	1C6	1C6A
부재단면 (PIT층)	[기존]	[기존]	[기존]	[기존]			
부재크기					350 X 1,600	350 X 550	350 X 515
MAIN BAR					16 - HD19	10 - HD19	10 - HD19
TIE BARS					HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES					HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4 구간 HOOP					HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	2C1	2C2	2C3	2C4			
부재단면	[기존]	[기존]	[기존]	[기존]			
부재크기							
MAIN BAR							
TIE BARS							
CROSS TIES							
기둥상하 L/4 구간 HOOP							
부재명	3C1	3C2	3C3	3C4			
부재단면							
부재크기	400 X 600	600 X 300	400 X 600	400 X 600			
MAIN BAR	18 - HD19	8 - HD19	8 - HD19	16 - HD19			
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250			
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250			
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125			



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 601
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 기둥 일람표-1			김구진	

■ 장례식장 기둥 일람표-2

부재명	BC7	BC8	BC9	BC10	BC11	BC12	BC13
부재단면							
부재크기	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 1,750
MAIN BAR	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	30 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	1C7	1C8	1C9	1C10	1C11	1C12	1C13
부재단면 (PIT층)							
부재크기	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 1,750
MAIN BAR	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	30 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	2C7	2C8	2C9	2C10	2C11	2C12	2C13
부재단면							
부재크기	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 1,750
MAIN BAR	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	30 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	3C7(증축용)	3C8(증축용)	3C9	3C10(증축용)	3C11(증축용)	3C12(증축용)	3C13(증축용)
부재단면							
부재크기	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 500	400 X 1,750
MAIN BAR	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	12 - HD19	30 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 602
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 기둥 일람표-2			김구진	

■ 장례식장 기둥 일람표-3

부재명	BC14	BC15	BC16	BC17	BC18		
부재단면							
부재크기	400 X 500	400 X 700	400 X 1,000	600 X 400	500 X 400		
MAIN BAR	14 - HD19	12 - HD19	14 - HD19	10 - HD19	10 - HD19		
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250		
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250		
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125		
부재명	1C14	1C15	1C16	1C17	1C18	1C19	1C20
부재단면 (PIT층)							
부재크기	400 X 500	400 X 700	400 X 1,000	600 X 400	500 X 400	400 X 400	400 X 400
MAIN BAR	14 - HD19	12 - HD19	14 - HD19	10 - HD19	10 - HD19	12 - HD19	12 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	2C14	2C15	2C16	2C17	2C18	2C19	2C20
부재단면							
부재크기	400 X 500	400 X 700	400 X 1,000	600 X 400	500 X 400	400 X 400	400 X 400
MAIN BAR	14 - HD19	12 - HD19	14 - HD19	10 - HD19	10 - HD19	12 - HD19	12 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125
부재명	3C14(증축용)	3C15	3C16	3C17	3C18	3C19(증축용)	3C20
부재단면							
부재크기	400 X 500	400 X 700	400 X 1,000	600 X 400	500 X 400	400 X 400	400 X 400
MAIN BAR	14 - HD19	12 - HD19	14 - HD19	10 - HD19	10 - HD19	12 - HD19	12 - HD19
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250	HD10 @ 250
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125	HD10 @ 125



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 603
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY 건축사	SHEET NO.
			장례식장 기둥 일람표-3			김구진	-

■ 장례식장 기둥 일람표-4

부재명							
부재단면							
부재크기							
MAIN BAR							
TIE BARS							
CROSS TIES							
기둥상하 L/4 구간 HOOP							
부재명	1C21	1C22	1C23				
부재단면 (PIT층)							
부재크기	400 X 500	400 X 500	400 X 500				
MAIN BAR	12 - HD19	12 - HD19	12 - HD19				
TIE BARS	HD10 @ 250	HD10 @ 250	HD10 @ 250				
CROSS TIES	HD10 @ 250	HD10 @ 250	HD10 @ 250				
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125	HD10 @ 125				
부재명	2C21	2C22					
부재단면							
부재크기	400 X 500	400 X 500					
MAIN BAR	12 - HD19	12 - HD19					
TIE BARS	HD10 @ 250	HD10 @ 250					
CROSS TIES	HD10 @ 250	HD10 @ 250					
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125					
부재명	3C21	3C22					
부재단면							
부재크기	400 X 500	400 X 500					
MAIN BAR	12 - HD19	12 - HD19					
TIE BARS	HD10 @ 250	HD10 @ 250					
CROSS TIES	HD10 @ 250	HD10 @ 250					
기둥상하 L/4 구간 HOOP	HD10 @ 125	HD10 @ 125					



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E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 604
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVD BY	CHECKED BY 건축사	SHEET NO.
			장례식장 기둥 일람표-4			김구진	-

장레식장 보 일람표-1

부재명	FG1[기존+증축]	FG1A[기존]	FG2[기존+증축]	FG3	FG4	FG5				
	ALL	ALL	ALL	ALL	ALL	ALL				
부재단면										
부재크기	400 X 600	400 X 600	300 X 600	350 X 600	350 X 600	300 X 600				
상부근	3-HD19	3-HD19	5-HD19	5-HD19	4-HD19	5-HD19				
하부근	3-HD19	3-HD19	5-HD19	5-HD19	4-HD19	5-HD19				
스터럽	HD10@250	HD10@250	HD10@250	HD10@200	HD10@250	HD10@200				
황보조근										
부재명	1G1		1G2		1G3		1G4		1G4A	
	END	CENT	END	CENT	END	CENT	END	CENT	ALL	
부재단면										
부재크기	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	300 X 600	
상부근	5-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19	3-HD19	
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@250	
황보조근										
부재명	1G5		1G6		1G7		1G8		1G9	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 500	400 X 500	400 X 500	400 X 500	400 X 600	400 X 600	400 X 600	400 X 600	300 X 700	300 X 700
상부근	7-HD19	3-HD19	7-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@200	HD10@200	HD10@200	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근									2-HD13	2-HD13
부재명	1G10		1G11		1G12		1G13		1G14	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	500 X 500	500 X 500	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700
상부근	7-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19
하부근	3-HD19	5-HD19	5-HD19	7-HD19	3-HD19	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@150	HD10@200	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13			2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION

DATE
200

PROJECT TITLE
김천의료원장레식장&의사숙소증축공사
DRAWING TITLE
장레식장 보 일람표-1

SCALE
A1: 1/ 30
A3: 1/ 60

TRACED BY
APPRVED BY

DRAWN BY
CHECKED BY
김 구 진

DRAWING NO.
S - 605
SHEET NO.
-

■ 장례식장 보 일람표-2

부재명	1G15		1G16		1G17		1G18		1G19	
	END	CENT	ALL		END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	200 X 600		300 X 600	300 X 600	400 X 600	400 X 600	300 X 700	300 X 700
상부근	5-HD19	3-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	5-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200		HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13							2-HD13	2-HD13
부재명	1G20		1G21		1G22					
	END	CENT	END	CENT	END	CENT				
부재단면										
부재크기	300 X 700	300 X 700	300 X 700	300 X 700	300 X 500	300 X 500				
상부근	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19				
하부근	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	5-HD19				
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250				
황보조근	2-HD13	2-HD13	2-HD13	2-HD13						
부재명	1B1		1B2		1B2A		1B3		1B4	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 600	400 X 600	400 X 600	400 X 600	400 X 500	400 X 500	400 X 500	400 X 500	400 X 600	400 X 600
상부근	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	3-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@200	HD10@200	HD10@200	HD10@200	HD10@250
황보조근										
부재명	1B5		1B6							
	ALL		ALL							
부재단면										
부재크기	300 X 500		200 X 500							
상부근	3-HD19		4-HD16							
하부근	3-HD19		4-HD16							
스터럽	HD10@250		HD10@200							
황보조근										



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신돌동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사속소중축공사				S - 606
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 보 일람표-2			김 구 진	

장레식장 보 일람표-3

부재명	2G1[기 존]		2G1A[기 존]		2G2[기 존]		2G2A[기 존]		2G3[기 존]	
	END	CENT	END	CENT			END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	300 X 700	300 X 700	400 X 800	400 X 800	300 X 800	300 X 800	300 X 800	300 X 800
상부근	10-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19
하부근	5-HD19	10-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	3-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
횡보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13
부재명	2G4[기 존]		2G5		2G6		2G7		2G8	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 800	300 X 800	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600
상부근	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
횡보조근	2-HD13	2-HD13								
부재명	2G8A		2G9		2G10		2G11		2G12	
	ALL		END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 600		400 X 700	400 X 700	400 X 700	400 X 700	400 X 600	400 X 600	400 X 600	400 X 600
상부근	3-HD19		7-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19		3-HD19	5-HD19	5-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@250		HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
횡보조근			2-HD13	2-HD13	2-HD13	2-HD13				
부재명	2G13		2G14		2G15		2G16		2G17	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700
상부근	5-HD19	3-HD19	7-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
횡보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장레식장&의사숙소증축공사				S - 607
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY 김 구 진	SHEET NO. -
			장레식장 보 일람표-3				

■ 장례식장 보 일람표-4

부재명	2G18		2G19		2G20		2G21		2G22	
	END	CENT	END	CENT	ALL		END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	400 X 700	400 X 700	200 X 600		300 X 600	300 X 600	400 X 600	400 X 600
상부근	5-HD19	3-HD19	5-HD19	3-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200		HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13						
부재명	2G23		2G24		2G25		2G26		2G27	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 500	300 X 500	300 X 800	300 X 800
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	5-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13			2-HD13	2-HD13
부재명	2G28		2G28A		2G29		2G30		2G31	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	350 X 600	350 X 600	350 X 600	350 X 600	350 X 700	350 X 700	350 X 700	350 X 700	350 X 700	350 X 700
상부근	5-HD19	3-HD19	6-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근					2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13
부재명	2G32									
	END	CENT								
부재단면										
부재크기	350 X 700	350 X 700								
상부근	5-HD19	3-HD19								
하부근	3-HD19	5-HD19								
스터럽	HD10@200	HD10@250								
황보조근	2-HD13	2-HD13								



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사속소중축공사				S - 608
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 보 일람표-4			김 구 진	

■ 장례식장 보 일람표-7

부재명	3G18		3G19		3G20		3G21		3G22	
	END	CENT	END	CENT	ALL		END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	400 X 700	400 X 700	200 X 600		300 X 600	300 X 600	400 X 600	400 X 600
상부근	5-HD19	3-HD19	5-HD19	3-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200		HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13						
부재명	3G23		3G24		3G25		3G26		3G27	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 500	300 X 500	300 X 800	300 X 800
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	5-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13			2-HD13	2-HD13
부재명	3B1[기 존]		3B2[기 존]		3B3[기 존]		3B4		3B5	
	END	CENT	ALL		END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	300 X 600		300 X 700	300 X 700	400 X 600	400 X 600	400 X 600	400 X 600
상부근	10-HD19	3-HD19	3-HD19		5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	5-HD19	10-HD19	3-HD19		3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@250		HD10@250	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13			2-HD13	2-HD13				
부재명	3B6		3B7		3B8		3B9		3B10	
	END	CENT	END	CENT	ALL		ALL		ALL	
부재단면										
부재크기	400 X 600	400 X 600	400 X 600	400 X 600	300 X 500		200 X 500		200 X 400	
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19		4-HD16		2-HD16	
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19		4-HD16		2-HD16	
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@250		HD10@200		HD10@250	
황보조근										



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신돌동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 611
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 보 일람표-7			김 구 진	

■ 장레식장 보 일람표-6

부재명	3G1[기 존]		3G1A[기 존]		3G2[기 존]		3G2A[기 존]		3G3[기 존]	
	END	CENT	END	CENT			END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	300 X 700	300 X 700	400 X 800	400 X 800	300 X 800	300 X 800	300 X 800	300 X 800
상부근	10-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19
하부근	5-HD19	10-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	3-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13
부재명	3G4[기 존]		3G5		3G6		3G7		3G8	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 800	300 X 800	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600
상부근	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13								
부재명	3G8A		3G9		3G10		3G11		3G12	
	ALL		END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 600		400 X 700	400 X 700	400 X 700	400 X 700	400 X 600	400 X 600	400 X 600	400 X 600
상부근	3-HD19		7-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19		3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@250		HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근			2-HD13	2-HD13	2-HD13	2-HD13				
부재명	3G13		3G14		3G15		3G16		3G17	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700
상부근	5-HD19	3-HD19	7-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장레식장&의사숙소증축공사				S - 610
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY 김 구 진	SHEET NO. -
			장레식장 보 일람표-6				

■ 장례식장 보 일람표-7

부재명	3G18		3G19		3G20		3G21		3G22	
	END	CENT	END	CENT	ALL		END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	400 X 700	400 X 700	200 X 600		300 X 600	300 X 600	400 X 600	400 X 600
상부근	5-HD19	3-HD19	5-HD19	3-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200		HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13						
부재명	3G23		3G24		3G25		3G26		3G27	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 500	300 X 500	300 X 800	300 X 800
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	5-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13			2-HD13	2-HD13
부재명	3B1[기존]		3B2[기존]		3B3[기존]		3B4		3B5	
	END	CENT	ALL		END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	300 X 600		300 X 700	300 X 700	400 X 600	400 X 600	400 X 600	400 X 600
상부근	10-HD19	3-HD19	3-HD19		5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	5-HD19	10-HD19	3-HD19		3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@250		HD10@250	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13			2-HD13	2-HD13				
부재명	3B6		3B7		3B8		3B9		3B10	
	END	CENT	END	CENT	ALL		ALL		ALL	
부재단면										
부재크기	400 X 600	400 X 600	400 X 600	400 X 600	300 X 500		200 X 500		200 X 400	
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19		4-HD16		2-HD16	
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19		4-HD16		2-HD16	
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@250		HD10@200		HD10@250	
황보조근										



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION

DATE
200

PROJECT TITLE
김천의료원장례식장 & 의사숙소증축공사
DRAWING TITLE
장례식장 보 일람표-7

SCALE
A1: 1/ 30
A3: 1/ 60

TRACED BY
APPRVED BY

DRAWN BY
CHECKED BY
김 구 진

DRAWING NO.
S - 611
SHEET NO.
-

■ 장례식장 보 일람표-8

부재명	RG1		RG1A		RG2		RG2A		RG3	
	END	CENT	END	CENT			END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	300 X 700	300 X 700	400 X 800	400 X 800	300 X 800	300 X 800	300 X 800	300 X 800
상부근	10-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19
하부근	5-HD19	10-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	3-HD19	5-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13
부재명	RG4		RG5		RG6		RG7		RG8	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 800	300 X 800	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600	400 X 600
상부근	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13								
부재명	RG8A		RG9		RG10		RG11		RG12	
	ALL		END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 600		400 X 700	400 X 700	400 X 700	400 X 700	400 X 600	400 X 600	400 X 600	400 X 600
상부근	3-HD19		7-HD19	3-HD19	5-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19		3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@250		HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근			2-HD13	2-HD13	2-HD13	2-HD13				
부재명	RG13		RG14		RG15		RG16		RG17	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700	400 X 700
상부근	5-HD19	3-HD19	7-HD19	3-HD19	7-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION

DATE
200

PROJECT TITLE
김천의료원장례식장&의사숙소증축공사
DRAWING TITLE
장례식장 보 일람표-8

SCALE
A1: 1/ 30
A3: 1/ 60

TRACED BY
APPROVED BY

DRAWN BY
CHECKED BY
김 구 진

DRAWING NO.
S - 612
SHEET NO.
-

■ 장례식장 보 일람표-9

부재명	RG18		RG19		RG20		RG21		RG22	
	END	CENT	END	CENT	ALL		END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	400 X 700	400 X 700	200 X 600		300 X 600	300 X 600	400 X 600	400 X 600
상부근	5-HD19	3-HD19	5-HD19	3-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
하부근	3-HD19	5-HD19	3-HD19	5-HD19	4-HD19		3-HD19	3-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200		HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13						
부재명	RG23		RG24		RG25		RG26		RG27	
	END	CENT	END	CENT	END	CENT	END	CENT	END	CENT
부재단면										
부재크기	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 700	300 X 500	300 X 500	300 X 800	300 X 800
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	3-HD19	5-HD19	5-HD19	3-HD19	3-HD19
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13	2-HD13			2-HD13	2-HD13
부재명	RB1		RB2		RB3		RB4		RB5	
	END	CENT	ALL		END	CENT	END	CENT	END	CENT
부재단면										
부재크기	400 X 700	400 X 700	300 X 600		300 X 700	300 X 700	400 X 600	400 X 600	400 X 600	400 X 600
상부근	10-HD19	3-HD19	3-HD19		5-HD19	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19
하부근	7-HD19	10-HD19	3-HD19		3-HD19	5-HD19	3-HD19	5-HD19	3-HD19	5-HD19
스터럽	HD10@200	HD10@250	HD10@250		HD10@250	HD10@250	HD10@200	HD10@250	HD10@200	HD10@250
황보조근	2-HD13	2-HD13			2-HD13	2-HD13				
부재명	RB6		RB7		RB8		RB9		RB10	
	END	CENT	END	CENT	ALL		ALL		ALL	
부재단면										
부재크기	400 X 600	400 X 600	400 X 600	400 X 600	300 X 500		200 X 500		200 X 400	
상부근	5-HD19	3-HD19	3-HD19	3-HD19	3-HD19		4-HD16		2-HD16	
하부근	3-HD19	5-HD19	3-HD19	5-HD19	3-HD19		4-HD16		2-HD16	
스터럽	HD10@200	HD10@250	HD10@200	HD10@250	HD10@250		HD10@200		HD10@250	
황보조근										



중합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 613
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 보 일람표-9			김 구 진	

■ 장례식장 보 일람표-10

부재명	PHCG1		PHRB1							
	ALL		ALL							
부재단면										
부재크기	200 X 400		200 X 500							
상부근	4-HD19		2-HD16							
하부근	2-HD19		2-HD16							
스터럽	HD13@150		HD10@250							
황보조근										
부재명										
부재단면										
부재크기										
상부근										
하부근										
스터럽										
황보조근										
부재명										
부재단면										
부재크기										
상부근										
하부근										
스터럽										
황보조근										
부재명										
부재단면										
부재크기										
상부근										
하부근										
스터럽										
황보조근										



종합건축사사무소 금산(주)
ARCHITECTS & ENGINEERS GROUP GUM SAN

경상북도 김천시 신들동 767 번지
TEL. 434-2263, 434-2541, 436-8070
FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200	김천의료원장례식장&의사숙소증축공사				S - 614
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPRVED BY	CHECKED BY 건축사	SHEET NO. -
			장례식장 보 일람표-10			김 구 진	

바닥 SLAB 일람표

fc= 24 MPa
fy= 400 MPa (SD400)

TYPE "A"			TYPE "B"			TYPE "C"									
TYPE "D"			TYPE "E"			TYPE "F"									
SLAB NO.	TYPE	THK.(mm)	X1 Y1	X2 Y2	X3 Y3	X4 Y4	X5 Y5	SLAB NO.	TYPE	THK.(mm)	X1 Y1	X2 Y2	X3 Y3	X4 Y4	X5 Y5
FS1	E	600	HD16 @150	HD16 @150				1CS1, 2CS1, 3CS1 RCS1, PHCS1	F	150	HD13+HD10 @100	HD10 @200			
			HD16 @150	HD16 @150							HD10 @200	HD10 @200			
FS2	E	200	HD13 @200	HD13 @200											
			HD13 @200	HD13 @200											
1S2, 2S2, 3S2 RS1, RS2	B	150	HD10 @400	HD10 @400	HD10 @400	HD10 @400	HD10 @400								
			HD10 @200	HD10 @400	HD10 @400	HD10 @400	HD10 @400								
3S2A, RS2A	E	150	HD13 @200	HD13 @200											
			HD10 @200	HD10 @200											
1S3, 2S3, 3S3 RS3, PHS1	E	150	HD13 @200	HD13 @200											
			HD13 @200	HD13 @200											
1S4, 2S4, 3S4 RS4, PHRS1	E	150	HD10 @200	HD10 @200											
			HD10 @200	HD10 @200											



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FAX. 433-9478
E-mail - gs338@korea.com

SYMBOL	DESCRIPTION	DATE	PROJECT TITLE	SCALE	TRACED BY	DRAWN BY	DRAWING NO.
		200 . . .	김천의료원장례식장 & 의사숙소 증축공사				S - 615
			DRAWING TITLE	A1: 1/ 30 A3: 1/ 60	APPROVED BY	CHECKED BY	SHEET NO.
			슬라브 리스트 및 배근도			김 구 진	-

5. 구조 해석 결과

5.1 슬래브 내력검토

<표 5.1> 슬래브 내력검토(장례식장)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (m)	THK (mm)	위 치		배 근	소요 M (kN·m)	저항 M (kN·m)	$\frac{\text{소요M}}{\text{저항M}}$	판정	비고
S1	2.45 X 4.5	150	단변	단부	D10@200	5.69	7.50	0.76	OK	2방향
				중앙부	D10@200	3.17	7.50	0.42	OK	
			장변	단부	D10@400	1.57	3.20	0.49	OK	
				중앙부	D10@400	0.94	3.20	0.29	OK	
S2	2.875 X 7.1	150	단변	단부	D10@200	5.75	7.50	0.77	OK	1방향
				중앙부	D10@200	4.31	7.50	0.57	OK	
S2	3.0 X 5.1	150	단변	단부	D10@200	6.38	7.50	0.86	OK	2방향
				중앙부	D10@200	3.53	7.50	0.47	OK	
			장변	단부	D10@200	1.79	6.10	0.29	OK	
				중앙부	D10@200	1.08	6.10	0.18	OK	
2S1(3)	3.45 X 4.8	120	단변	단부	D13@200	9.62	10.01	0.96	OK	2방향
				중앙부	D13@200	5.64	10.01	0.56	OK	
			장변	단부	D13@300	4.46	5.81	0.77	OK	
				중앙부	D13@300	2.75	5.81	0.47	OK	

<표 5.2> 슬래브 내력검토(의사속소)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (m)	THK (mm)	위 치		배 근	소요 M (kN·m)	저항 M (kN·m)	$\frac{\text{소요M}}{\text{저항M}}$	판정	비고
S1	3.8 X 6.2	150	단변	단부	D10@200	5.69	7.50	0.76	OK	2방향
				중앙부	D10@200	3.17	7.50	0.42	OK	
			장변	단부	D10@200	1.57	6.10	0.28	OK	
				중앙부	D10@200	0.94	6.10	0.15	OK	
S2	3.0 X 4.0	150	단변	단부	D10@200	6.99	7.50	0.93	OK	2방향
				중앙부	D10@200	3.57	7.50	0.48	OK	
			장변	단부	D10@200	3.96	6.10	0.65	OK	
				중앙부	D10@200	2.00	6.10	0.33	OK	
CS1	1.2 X 3.8	150	단변	단부	D10@200	1.35	7.50	0.18	OK	2방향
				중앙부	D10@200	1.01	7.50	0.13	OK	

5.2 보 내력검토

<표 5.3> 보 내력검토(장례식장)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
1G1	40 X 60	단부	3-D19	130.70	0.53	D10@200	94.22	0.38	OK
			244.34			246.23			
		중앙부	5-D19	29.60	0.12	D10@250	83.20	0.37	OK
			244.34			223.26			
1G2	40 X 60	단부	3-D19	81.98	0.34	D10@200	91.36	0.37	OK
			244.34			246.23			
		중앙부	5-D19	59.97	0.25	D10@250	63.53	0.28	OK
			244.34			223.26			
1G3	40 X 60	단부	3-D22	147.86	0.34	D10@200	114.45	0.48	OK
			434.29			240.03			
		중앙부	5-D22	38.20	0.12	D10@250	95.01	0.43	OK
			325.05			223.26			
1G4	40 X 60	단부	3-D19	129.76	0.53	D10@200	127.58	0.52	OK
			244.34			246.23			
		중앙부	5-D19	115.85	0.47	D10@250	125.44	0.56	OK
			244.34			223.26			
1G5	40 X 50	단부	3-D19	40.11	0.15	D10@200	42.85	0.22	OK
			259.10			194.54			
		중앙부	5-D19	17.14	0.09	D10@200	29.98	0.15	OK
			195.62			200.33			
1G6	40 X 50	단부	3-D19	40.78	0.16	D10@200	43.39	0.22	OK
			259.10			194.54			
		중앙부	5-D19	21.15	0.11	D10@200	36.88	0.18	OK
			195.62			200.33			
1G8	40 X 60	단부	3-D19	15.91	0.07	D10@200	56.64	0.23	OK
			244.34			246.23			
		중앙부	5-D19	1.33	0.01	D10@250	55.58	0.25	OK
			244.34			223.26			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
1G10	40 X 70	단부	3-D19	137.08	0.35	D10@200	109.27	0.39	OK
			389.91			283.35			
		중앙부	5-D19	64.51	0.22	D10@250	95.60	0.36	OK
			289.61			262.17			
1G11	50 X 50	단부	5-D19	166.21	0.63	D10@150	158.33	0.63	OK
			263.23			250.74			
		중앙부	7-D19	111.98	0.43	D10@200	146.06	0.64	OK
			263.18			227.06			
1G12	40 X 70	단부	3-D19	22.41	0.08	D10@200	33.54	0.12	OK
			289.61			289.13			
		중앙부	5-D19	16.04	0.06	D10@250	23.93	0.09	OK
			289.61			262.17			
1G13	40 X 70	단부	3-D19	24.38	0.14	D10@200	29.66	0.10	OK
			179.28			289.13			
		중앙부	3-D19	7.92	0.04	D10@250	21.97	0.08	OK
			179.28			262.17			
1G14	40 X 70	단부	3-D19	20.08	0.11	D10@200	28.04	0.10	OK
			179.28			289.13			
		중앙부	3-D19	6.83	0.04	D10@250	20.39	0.08	OK
			179.28			262.17			
1G15	40 X 70	단부	3-D19	14.04	0.05	D10@200	22.85	0.08	OK
			289.61			289.13			
		중앙부	5-D19	6.45	0.02	D10@250	14.44	0.06	OK
			289.61			262.17			
1G16	20 X 60	단부	4-D19	27.19	0.15	D10@200	48.54	0.28	OK
			179.80			173.10			
		중앙부	4-D19	18.83	0.10	D10@200	28.88	0.17	OK
			179.80			173.10			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
1G17	30 X 60	단부	3-D19	21.38	0.14	D10@200	44.78	0.21	OK
			148.47			213.37			
		중앙부	3-D19	25.16	0.17	D10@250	39.31	0.21	OK
			148.47			190.40			
1B1	40 X 60	단부	3-D19	137.75	0.56	D10@200	88.24	0.36	OK
			244.34			246.23			
		중앙부	5-D19	10.27	0.04	D10@250	75.76	0.34	OK
			244.34			223.26			
1B2	40 X 60	단부	3-D19	41.72	0.17	D10@200	82.99	0.34	OK
			244.34			246.23			
		중앙부	5-D19	94.81	0.39	D10@250	57.18	0.26	OK
			244.34			223.26			
1B2A	40 X 50	단부	3-D19	73.88	0.38	D10@200	75.23	0.38	OK
			195.62			200.33			
		중앙부	3-D19	46.06	0.38	D10@200	50.86	0.25	OK
			122.07			200.33			
1B3	40 X 50	단부	3-D22	116.65	0.72	D10@200	107.71	0.54	OK
			160.95			200.33			
		중앙부	3-D22	105.82	0.66	D10@200	65.61	0.33	OK
			160.95			200.33			
1B6	20 X 50	단부	4-D16	8.20	0.08	D10@200	23.61	0.17	OK
			101.69			139.99			
		중앙부	4-D16	4.97	0.05	D10@200	12.72	0.09	OK
			101.69			139.99			
2G1	40 X 70	단부	5-D19	106.86	0.20	D10@200	101.77	0.36	OK
			538.69			279.02			
		중앙부	10-D19	46.00	0.09	D10@250	94.30	0.36	OK
			535.77			262.17			

<표 5.3> 보 내력검토(장례식장) (계속)

f_{ck}=24MPa, f_y=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G1A	30 X 70	단부	3-D19	121.99	0.44	D10@200	83.11	0.34	OK
			276.86			243.54			
		중앙부	5-D19	1.81	0.01	D10@250	71.95	0.32	OK
			276.86			223.59			
2G2	40 X 80	단부	3-D19	337.03	0.74	D10@200	197.21	0.60	OK
			452.98			326.40			
		중앙부	7-D19	190.21	0.42	D10@250	170.77	0.57	OK
			452.98			301.20			
2G3	30 X 80	단부	3-D19	13.88	0.04	D10@200	28.43	0.10	OK
			321.93			280.84			
		중앙부	5-D19	5.56	0.02	D10@250	17.58	0.07	OK
			321.93			250.62			
2G5	40 X 60	단부	3-D19	65.48	0.27	D10@200	88.38	0.36	OK
			244.34			246.23			
		중앙부	5-D19	73.26	0.30	D10@250	55.27	0.25	OK
			244.34			223.26			
2G6	40 X 60	단부	3-D19	96.54	0.40	D10@200	89.42	0.36	OK
			244.34			246.23			
		중앙부	5-D19	43.39	0.18	D10@250	61.59	0.28	OK
			244.34			223.26			
2G7	40 X 60	단부	3-D19	143.72	0.44	D10@200	120.54	0.50	OK
			327.30			240.44			
		중앙부	5-D19	53.73	0.22	D10@250	78.90	0.35	OK
			244.34			223.26			
2G8	40 X 60	단부	3-D19	113.72	0.47	D10@200	119.66	0.49	OK
			244.34			246.23			
		중앙부	5-D19	58.31	0.24	D10@250	114.66	0.51	OK
			244.34			223.26			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G8A	30 X 60	단부	3-D19	12.14	0.08	D10@250	16.82	0.09	OK
			148.47			190.40			
		중앙부	3-D19	1.38	0.01	D10@250	12.52	0.07	OK
			148.47			190.40			
2G9	40 X 70	단부	3-D19	42.36	0.11	D10@200	50.85	0.18	OK
			389.91			283.35			
		중앙부	5-D19	32.29	0.11	D10@250	35.80	0.14	OK
			289.61			262.17			
2G10	40 X 70	단부	5-D19	23.16	0.08	D10@200	28.11	0.10	OK
			289.53			289.13			
		중앙부	5-D19	7.34	0.03	D10@250	25.47	0.10	OK
			289.61			262.17			
2G11	40 X 60	단부	3-D19	198.20	0.61	D10@200	147.91	0.62	OK
			327.30			240.44			
		중앙부	5-D19	124.66	0.51	D10@250	146.18	0.65	OK
			244.34			223.26			
2G12	40 X 60	단부	3-D19	146.87	0.60	D10@200	162.21	0.66	OK
			244.34			246.23			
		중앙부	5-D19	82.51	0.34	D10@250	161.17	0.72	OK
			244.34			223.26			
2G13	30 X 70	단부	3-D19	75.98	0.27	D10@200	64.30	0.26	OK
			276.86			243.54			
		중앙부	3-D19	33.43	0.19	D10@250	53.66	0.24	OK
			175.96			223.59			
2G14	40 X 70	단부	3-D19	187.38	0.48	D10@200	165.39	0.58	OK
			389.91			283.35			
		중앙부	5-D19	108.76	0.38	D10@250	151.72	0.58	OK
			289.61			262.17			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G15	40 X 70	단부	3-D19	167.18	0.42	D10@200	167.52	0.58	OK
			398.59			287.94			
		중앙부	5-D19	119.28	0.40	D10@250	154.69	0.58	OK
			294.47			266.33			
2G16	40 X 70	단부	3-D19	17.88	0.06	D10@200	28.79	0.10	OK
			289.61			289.13			
		중앙부	5-D19	11.19	0.04	D10@250	19.19	0.07	OK
			289.61			262.17			
2G17	40 X 70	단부	3-D19	121.39	0.42	D10@200	88.58	0.31	OK
			289.61			289.13			
		중앙부	5-D19	49.33	0.17	D10@250	78.98	0.30	OK
			289.61			262.17			
2G18	40 X 70	단부	3-D19	69.56	0.24	D10@200	74.38	0.26	OK
			289.61			289.13			
		중앙부	5-D19	46.89	0.16	D10@250	65.32	0.25	OK
			289.61			262.17			
2G19	40 X 70	단부	3-D19	13.70	0.05	D10@200	23.30	0.08	OK
			289.61			289.13			
		중앙부	5-D19	8.01	0.03	D10@250	15.35	0.06	OK
			289.61			262.17			
2G20	20 X 60	단부	4-D19	29.69	0.17	D10@200	46.34	0.27	OK
			179.80			173.10			
		중앙부	4-D19	19.15	0.11	D10@200	31.29	0.18	OK
			179.80			173.10			
2G21	30 X 60	단부	3-D19	14.19	0.10	D10@200	40.68	0.19	OK
			148.47			213.27			
		중앙부	3-D19	7.15	0.05	D10@250	22.28	0.12	OK
			148.47			200.40			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G22	40 X 60	단부	3-D19	78.91	0.52	D10@200	67.77	0.28	OK
			151.30			245.23			
		중앙부	3-D19	24.42	0.16	D10@250	40.65	0.18	OK
			151.30			223.26			
2G23	30 X 70	단부	3-D19	131.94	0.48	D10@200	168.59	0.69	OK
			276.88			243.54			
		중앙부	3-D19	95.68	0.54	D10@250	162.43	0.73	OK
			175.96			233.59			
2G24	30 X 70	단부	3-D19	72.05	0.41	D10@200	51.12	0.20	OK
			175.96			250.55			
		중앙부	3-D19	0.07	0.0004	D10@250	45.78	0.20	OK
			175.96			233.59			
2G25	30 X 70	단부	3-D19	80.00	0.45	D10@200	87.15	0.35	OK
			175.96			250.55			
		중앙부	3-D19	25.43	0.14	D10@250	77.29	0.35	OK
			175.96			233.59			
2G27	30 X 80	단부	3-D19	130.61	0.41	D10@200	124.65	0.44	OK
			321.93			288.86			
		중앙부	3-D19	57.95	0.28	D10@250	116.81	0.45	OK
			203.59			256.88			
2G28	35 X 60	단부	3-D19	171.98	0.73	D10@200	143.01	0.64	OK
			234.01			222.24			
		중앙부	5-D19	115.33	0.49	D10@250	125.93	0.61	OK
			234.01			206.83			
2G28A	35 X 60	단부	3-D19	174.94	0.64	D10@200	133.33	0.61	OK
			275.48			220.35			
		중앙부	5-D19	74.68	0.32	D10@250	117.12	0.57	OK
			234.01			206.83			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G29	35 X 70	단부	3-D19	25.77	0.09	D10@200	31.33	0.12	OK
			279.02			262.29			
		중앙부	5-D19	7.58	0.03	D10@250	20.62	0.08	OK
			279.02			242.88			
2G30	35 X 70	단부	3-D19	9.23	0.03	D10@200	17.10	0.07	OK
			279.02			262.29			
		중앙부	5-D19	10.73	0.04	D10@250	12.74	0.05	OK
			279.02			236.08			
2G31	35 X 70	단부	3-D19	9.75	0.04	D10@200	17.32	0.07	OK
			279.02			262.29			
		중앙부	5-D19	4.59	0.02	D10@250	11.79	0.05	OK
			279.02			242.88			
2G32	35 X 70	단부	3-D19	12.29	0.04	D10@200	14.64	0.06	OK
			279.02			262.29			
		중앙부	5-D19	0.00	0.00	D10@250	10.21	0.04	OK
			279.02			242.88			
2B1	40 X 80	단부	5-D22	218.07	0.36	D13@150	147.90	0.28	OK
			990.27			597.34			
		중앙부	8-D22	182.43	0.27	D13@150	124.36	0.23	OK
			681.76			544.11			
2B2	30 X 60	단부	3-D19	60.41	0.41	D10@250	87.38	0.46	OK
			148.47			190.30			
		중앙부	3-D19	71.35	0.48	D10@250	80.31	0.42	OK
			148.47			190.30			
2B3	30 X 70	단부	3-D19	25.97	0.09	D10@250	57.56	0.26	OK
			276.86			217.33			
		중앙부	5-D19	54.57	0.20	D10@250	47.17	0.21	OK
			276.86			217.33			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2B4	40 X 60	단부	3-D19	69.87	0.29	D10@200	91.65	0.37	OK
			244.34			246.23			
		중앙부	5-D19	92.43	0.38	D10@250	60.09	0.27	OK
			244.34			223.26			
2B5	40 X 60	단부	3-D19	93.98	0.38	D10@200	84.92	0.34	OK
			244.34			246.23			
		중앙부	5-D19	67.16	0.27	D10@250	59.12	0.26	OK
			244.34			223.26			
2B6	40 X 60	단부	3-D19	118.60	0.49	D10@200	114.29	0.46	OK
			244.34			246.23			
		중앙부	5-D19	120.12	0.49	D10@250	70.19	0.31	OK
			244.34			223.26			
2B8	30 X 50	단부	3-D19	26.98	0.23	D10@250	39.65	0.26	OK
			119.24			155.92			
		중앙부	3-D19	15.59	0.13	D10@250	30.78	0.20	OK
			119.24			155.92			
2B9	20 X 50	단부	4-D16	14.24	0.14	D10@200	21.47	0.15	OK
			101.69			139.99			
		중앙부	4-D16	8.14	0.08	D10@200	14.95	0.11	OK
			101.69			139.99			
2B10	20 X 40	단부	2-D16	9.58	0.22	D10@250	29.61	0.30	OK
			43.32			98.82			
		중앙부	2-D16	4.79	0.11	D10@250	14.17	0.14	OK
			43.32			98.82			
2B11	35 X 60	단부	3-D19	193.96	0.70	D10@200	119.02	0.54	OK
			275.48			220.35			
		중앙부	3-D19	69.90	0.47	D10@250	105.37	0.51	OK
			149.89			206.83			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2B12	35 X 60	단부	3-D19	206.17	0.75	D10@200	135.01	0.61	OK
			275.48			220.35			
		중앙부	3-D19	100.32	0.67	D10@250	121.58	0.59	OK
			149.89			206.83			
2B13	30 X 50	단부	3-D22	70.96	0.45	D10@250	78.23	0.51	OK
			157.74			154.92			
		중앙부	3-D22	36.37	0.23	D10@250	71.58	0.46	OK
			157.74			154.92			
3G1	40 X 70	단부	5-D19	227.96	0.42	D10@200	174.06	0.62	OK
			538.69			279.02			
		중앙부	10-D19	191.24	0.36	D10@250	148.83	0.57	OK
			535.77			252.27			
3G1A	30 X 70	단부	3-D19	103.68	0.37	D10@200	150.89	0.62	OK
			276.86			243.54			
		중앙부	5-D19	96.42	0.35	D10@250	144.35	0.65	OK
			276.86			223.59			
3G2	40 X 80	단부	3-D19	31.85	0.07	D10@200	41.36	0.13	OK
			452.98			326.40			
		중앙부	7-D19	17.16	0.04	D10@250	24.18	0.08	OK
			452.98			295.96			
3G2A	30 X 80	단부	3-D19	12.15	0.06	D10@200	21.71	0.08	OK
			203.59			287.86			
		중앙부	3-D19	6.11	0.03	D10@250	13.10	0.05	OK
			203.59			256.88			
3G3	30 X 80	단부	3-D19	9.29	0.03	D10@200	16.64	0.06	OK
			321.93			280.84			
		중앙부	5-D19	4.36	0.01	D10@250	10.29	0.04	OK
			321.93			256.88			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
3G4	30 X 80	단부	3-D19	109.79	0.54	D10@200	105.20	0.37	OK
			203.59			287.86			
		중앙부	3-D19	57.22	0.28	D10@250	95.62	0.37	OK
			203.59			256.88			
3G5	40 X 60	단부	3-D19	96.14	0.39	D10@200	98.46	0.40	OK
			244.34			246.23			
		중앙부	5-D19	69.30	0.28	D10@250	65.35	0.29	OK
			244.34			223.26			
3G6	40 X 60	단부	3-D19	105.66	0.43	D10@200	97.27	0.40	OK
			244.34			246.23			
		중앙부	5-D19	51.51	0.21	D10@250	69.44	0.31	OK
			244.34			223.26			
3G7	40 X 60	단부	3-D19	170.44	0.52	D10@200	130.93	0.54	OK
			327.30			240.44			
		중앙부	5-D19	63.03	0.26	D10@250	89.28	0.40	OK
			244.34			223.26			
3G8	40 X 60	단부	3-D19	132.77	0.54	D10@200	109.90	0.45	OK
			244.34			246.23			
		중앙부	5-D19	68.02	0.28	D10@250	105.39	0.47	OK
			244.34			223.26			
3G8A	30 X 60	단부	3-D19	95.83	0.65	D10@250	82.16	0.43	OK
			148.47			190.40			
		중앙부	3-D19	12.54	0.08	D10@250	77.86	0.41	OK
			148.47			190.40			
3G9	40 X 70	단부	3-D19	66.89	0.17	D10@200	70.16	0.25	OK
			389.91			283.35			
		중앙부	5-D19	60.55	0.21	D10@250	39.51	0.15	OK
			289.61			262.17			

<표 5.3> 보 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
3G10	40 X 70	단부	3-D19	40.84	0.14	D10@200	48.22	0.17	OK
			289.61			289.13			
		중앙부	5-D19	25.20	0.09	D10@250	29.11	0.11	OK
			289.61			262.17			
3G11	40 X 60	단부	3-D19	211.25	0.65	D10@200	153.21	0.64	OK
			327.30			240.44			
		중앙부	5-D19	128.39	0.53	D10@250	151.48	0.68	OK
			244.34			223.26			
3G12	40 X 60	단부	3-D19	169.14	0.69	D10@200	150.06	0.61	OK
			244.34			246.23			
		중앙부	5-D19	95.73	0.39	D10@250	149.03	0.67	OK
			244.34			223.26			
3G14	40 X 70	단부	3-D19	219.96	0.56	D10@200	176.71	0.62	OK
			389.91			283.35			
		중앙부	5-D19	112.27	0.39	D10@250	163.05	0.62	OK
			289.61			262.17			
3G15	40 X 70	단부	3-D19	180.90	0.45	D10@200	172.41	0.60	OK
			398.59			287.94			
		중앙부	5-D19	119.93	0.41	D10@250	159.58	0.60	OK
			294.97			266.33			
3G16	40 X 70	단부	3-D19	15.26	0.05	D10@200	25.60	0.09	OK
			289.61			289.13			
		중앙부	5-D19	8.40	0.03	D10@250	15.99	0.06	OK
			289.61			262.17			
3G17	40 X 70	단부	3-D19	140.81	0.49	D10@200	95.34	0.33	OK
			289.61			289.13			
		중앙부	5-D19	52.65	0.18	D10@250	86.44	0.33	OK
			289.61			262.17			

<표 5.3> 보 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
3G18	40 X 70	단부	3-D19	81.94	0.28	D10@200	75.81	0.26	OK
			289.61			289.13			
		중앙부	5-D19	54.01	0.19	D10@250	66.75	0.25	OK
			289.61			262.17			
3G19	40 X 70	단부	3-D19	12.63	0.04	D10@200	22.36	0.08	OK
			289.61			289.13			
		중앙부	5-D19	6.77	0.02	D10@250	13.94	0.05	OK
			289.61			262.17			
3G20	20 X 60	단부	4-D19	29.08	0.16	D10@200	46.71	0.27	OK
			179.80			173.10			
		중앙부	4-D19	19.12	0.11	D10@200	30.92	0.18	OK
			179.80			173.10			
3G21	30 X 60	단부	3-D19	72.57	0.49	D10@200	77.15	0.36	OK
			148.47			212.37			
		중앙부	3-D19	27.54	0.19	D10@250	70.70	0.37	OK
			148.47			190.40			
3G22	40 X 60	단부	3-D19	101.23	0.67	D10@200	72.86	0.30	OK
			151.30			246.23			
		중앙부	3-D19	25.42	0.17	D10@250	48.90	0.22	OK
			151.30			223.26			
3G23	30 X 70	단부	3-D19	72.34	0.26	D10@200	73.36	0.30	OK
			276.86			243.54			
		중앙부	3-D19	66.11	0.38	D10@250	67.58	0.30	OK
			175.96			223.59			
3G25	30 X 70	단부	3-D19	80.42	0.46	D10@200	77.22	0.31	OK
			175.96			250.55			
		중앙부	3-D19	29.84	0.17	D10@250	73.19	0.33	OK
			175.96			223.59			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
3G27	30 X 80	단부	3-D19	37.95	0.12	D10@200	42.47	0.15	OK
			321.93			280.84			
		중앙부	3-D19	17.64	0.09	D10@250	26.40	0.10	OK
			203.59			256.88			
3B1	40 X 70	단부	5-D19	66.22	0.12	D10@200	111.12	0.40	OK
			538.69			279.02			
		중앙부	10-D19	183.27	0.34	D10@250	88.85	0.35	OK
			535.77			253.00			
3B2	30 X 60	단부	3-D19	75.27	0.51	D10@250	92.96	0.49	OK
			148.47			189.40			
		중앙부	3-D19	66.75	0.45	D10@250	85.89	0.45	OK
			148.47			189.40			
3B3	30 X 70	단부	3-D19	22.14	0.08	D10@250	59.75	0.27	OK
			276.86			217.33			
		중앙부	5-D19	62.46	0.23	D10@250	49.36	0.23	OK
			276.86			217.33			
3B4	40 X 60	단부	3-D19	64.87	0.27	D10@200	90.96	0.37	OK
			244.34			246.23			
		중앙부	5-D19	94.12	0.39	D10@250	59.39	0.27	OK
			244.34			223.26			
3B5	40 X 60	단부	3-D19	87.54	0.36	D10@200	84.20	0.34	OK
			244.34			246.23			
		중앙부	5-D19	74.35	0.30	D10@250	58.39	0.26	OK
			244.34			223.26			
3B6	40 X 60	단부	3-D19	112.40	0.46	D10@200	113.23	0.46	OK
			244.34			246.23			
		중앙부	5-D19	122.56	0.50	D10@250	69.13	0.31	OK
			244.34			223.26			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
3B7	40 X 60	단부	3-D19	54.42	0.36	D10@200	76.24	0.31	OK
			151.30			246.23			
		중앙부	5-D19	66.27	0.27	D10@250	52.23	0.23	OK
			244.34			223.26			
3B8	30 X 50	단부	3-D19	23.28	0.20	D10@250	40.72	0.26	OK
			119.24			154.92			
		중앙부	3-D19	21.15	0.18	D10@250	31.86	0.21	OK
			119.24			154.92			
3B9	20 X 50	단부	4-D19	14.22	0.10	D10@200	21.43	0.15	OK
			140.83			139.45			
		중앙부	4-D19	8.10	0.06	D10@200	14.92	0.11	OK
			140.83			139.45			
3B10	20 X 40	단부	2-D16	7.93	0.18	D10@250	22.83	0.23	OK
			43.32			98.82			
		중앙부	2-D16	4.16	0.10	D10@250	12.51	0.13	OK
			43.32			98.82			
RG1	40 X 70	단부	5-D19	239.63	0.44	D10@200	176.23	0.63	OK
			538.69			279.02			
		중앙부	10-D19	185.99	0.35	D10@250	151.00	0.58	OK
			535.77			262.17			
RG1A	30 X 70	단부	3-D19	117.46	0.42	D10@200	136.28	0.56	OK
			276.86			243.54			
		중앙부	5-D19	100.66	0.36	D10@250	129.74	0.58	OK
			276.86			223.59			
RG2	40 X 80	단부	3-D19	149.02	0.33	D10@200	126.43	0.39	OK
			452.98			326.40			
		중앙부	7-D19	69.88	0.15	D10@250	115.85	0.38	OK
			452.98			301.20			

<표 5.3> 보 내력검토(장례식장) (계속)

f_{ck}=24MPa, f_y=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
RG2A	30 X 80	단부	3-D19	11.00	0.05	D10@200	21.54	0.07	OK
			203.59			287.86			
		중앙부	3-D19	6.03	0.03	D10@250	12.85	0.05	OK
			203.59			256.08			
RG3	30 X 80	단부	3-D19	7.96	0.02	D10@200	16.40	0.06	OK
			321.93			280.84			
		중앙부	5-D19	4.70	0.01	D10@250	10.30	0.04	OK
			321.93			250.62			
RG5	40 X 60	단부	3-D19	105.58	0.43	D10@200	103.22	0.42	OK
			244.34			246.23			
		중앙부	5-D19	72.93	0.30	D10@250	69.63	0.31	OK
			244.34			223.26			
RG6	40 X 60	단부	3-D19	108.17	0.44	D10@200	98.85	0.40	OK
			244.34			246.23			
		중앙부	5-D19	57.09	0.23	D10@250	71.35	0.32	OK
			244.34			223.26			
RG7	40 X 60	단부	3-D19	186.12	0.57	D10@200	137.32	0.57	OK
			327.30			240.44			
		중앙부	7-D19	69.84	0.51	D10@250	95.21	0.43	OK
			327.30			223.26			
RG8	40 X 60	단부	3-D19	140.45	0.57	D10@200	110.85	0.45	OK
			244.34			246.23			
		중앙부	5-D19	68.60	0.28	D10@250	106.34	0.48	OK
			244.34			223.26			
RG8A	30 X 60	단부	3-D19	108.97	0.73	D10@250	92.00	0.48	OK
			148.47			190.40			
		중앙부	3-D19	15.43	0.10	D10@250	87.76	0.46	OK
			148.47			190.40			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
RG9	40 X 70	단부	3-D19	71.63	0.18	D10@200	72.52	0.26	OK
			389.91			283.35			
		중앙부	5-D19	65.51	0.22	D10@250	41.93	0.16	OK
			289.61			262.17			
RG10	40 X 70	단부	3-D19	36.14	0.12	D10@200	47.45	0.16	OK
			289.61			289.13			
		중앙부	5-D19	27.41	0.09	D10@250	28.39	0.11	OK
			289.61			262.17			
RG11	40 X 60	단부	3-D19	218.01	0.67	D10@200	155.53	0.65	OK
			327.30			240.44			
		중앙부	5-D19	128.89	0.53	D10@250	153.80	0.69	OK
			244.34			223.26			
RG12	40 X 60	단부	3-D19	173.54	0.71	D10@200	146.92	0.60	OK
			244.34			246.23			
		중앙부	5-D19	97.47	0.40	D10@250	145.89	0.65	OK
			244.34			223.26			
RG14	40 X 70	단부	3-D19	240.23	0.62	D10@200	185.50	0.65	OK
			389.91			283.35			
		중앙부	5-D19	113.46	0.39	D10@250	171.45	0.65	OK
			289.61			262.17			
RG15	40 X 70	단부	3-D19	199.01	0.51	D10@200	178.41	0.63	OK
			389.91			283.35			
		중앙부	5-D19	116.77	0.40	D10@250	165.20	0.63	OK
			289.61			262.17			
RG16	40 X 70	단부	3-D19	14.74	0.05	D10@200	25.22	0.09	OK
			289.61			289.13			
		중앙부	5-D19	7.44	0.03	D10@250	15.62	0.06	OK
			289.61			262.17			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
RG17	40 X 70	단부	3-D19	153.67	0.53	D10@200	101.82	0.35	OK
			289.61			289.13			
		중앙부	5-D19	56.60	0.20	D10@250	92.80	0.35	OK
			289.61			262.17			
RG18	40 X 70	단부	3-D19	102.36	0.35	D10@200	83.24	0.29	OK
			289.61			289.13			
		중앙부	5-D19	54.61	0.19	D10@250	74.05	0.28	OK
			289.61			262.17			
RG19	40 X 70	단부	3-D19	12.41	0.04	D10@200	22.30	0.08	OK
			289.61			289.13			
		중앙부	5-D19	6.79	0.02	D10@250	13.89	0.05	OK
			289.61			262.17			
RG20	20 X 60	단부	4-D19	28.62	0.16	D10@200	46.36	0.27	OK
			179.80			173.10			
		중앙부	4-D19	18.85	0.10	D10@200	30.54	0.18	OK
			179.80			173.10			
RG21	30 X 60	단부	3-D19	75.01	0.51	D10@200	79.25	0.37	OK
			148.47			213.37			
		중앙부	3-D19	25.06	0.17	D10@250	72.81	0.38	OK
			148.47			190.40			
RG22	40 X 60	단부	3-D19	104.45	0.69	D10@200	73.74	0.30	OK
			151.30			246.23			
		중앙부	3-D19	25.54	0.17	D10@250	49.97	0.22	OK
			151.30			223.26			
RG23	30 X 70	단부	3-D19	80.90	0.29	D10@200	78.35	0.32	OK
			276.86			243.54			
		중앙부	3-D19	69.14	0.39	D10@250	70.16	0.31	OK
			175.96			223.59			

<표 5.3> 보 내력검토(장례식장) (계속)

f_{ck}=24MPa, f_y=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
RG25	30 X 70	단부	3-D19	93.02	0.53	D10@200	114.06	0.46	OK
			175.95			250.55			
		중앙부	3-D19	44.37	0.25	D10@250	110.14	0.49	OK
			175.96			223.59			
RG27	30 X 80	단부	3-D19	34.56	0.11	D10@200	41.28	0.15	OK
			321.93			280.84			
		중앙부	3-D19	18.36	0.09	D10@250	25.21	0.10	OK
			203.59			256.88			
RB1	40 X 70	단부	7-D19	48.49	0.09	D10@200	109.42	0.39	OK
			534.80			279.02			
		중앙부	10-D19	175.85	0.33	D10@250	87.16	0.34	OK
			535.77			253.00			
RB2	30 X 60	단부	3-D19	75.79	0.51	D10@250	95.58	0.50	OK
			148.47			190.40			
		중앙부	3-D19	71.02	0.48	D10@250	88.50	0.46	OK
			148.47			190.40			
RB3	30 X 70	단부	3-D19	22.96	0.08	D10@250	60.94	0.28	OK
			276.86			217.33			
		중앙부	5-D19	63.40	0.23	D10@250	50.55	0.23	OK
			276.86			217.33			
RB4	40 X 60	단부	3-D19	68.54	0.28	D10@200	93.04	0.38	OK
			244.34			246.23			
		중앙부	5-D19	96.45	0.39	D10@250	61.48	0.28	OK
			244.34			223.26			
RB5	40 X 60	단부	3-D19	83.66	0.34	D10@200	83.53	0.34	OK
			244.34			246.23			
		중앙부	5-D19	78.35	0.32	D10@250	57.72	0.26	OK
			244.34			223.26			

<표 5.3> 보 내력검토(장례식장) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
RB6	40 X 60	단부	3-D19	108.87	0.45	D10@200	112.58	0.46	OK
			244.34			246.23			
		중앙부	5-D19	123.80	0.51	D10@250	68.48	0.31	OK
			244.34			223.26			
RB7	40 X 60	단부	3-D19	55.23	0.37	D10@200	76.66	0.31	OK
			151.30			246.23			
		중앙부	5-D19	66.71	0.27	D10@250	52.66	0.24	OK
			244.34			223.26			
RB8	30 X 50	단부	3-D19	23.68	0.20	D10@250	40.37	0.26	OK
			119.24			154.92			
		중앙부	3-D19	19.98	0.17	D10@250	31.50	0.20	OK
			119.24			154.92			
RB9	20 X 50	단부	4-D16	14.20	0.14	D10@200	21.41	0.15	OK
			101.69			139.99			
		중앙부	4-D16	8.09	0.08	D10@200	14.90	0.11	OK
			101.69			139.99			

<표 5.4> 보 내력검토(의사속소)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
FG1	40 X 60	단부	5-D22	60.77	0.19	D13@150	75.97	0.19	OK
			325.23			403.32			
		중앙부	5-D22	26.14	0.08	D13@150	65.12	0.16	OK
			325.23			403.32			
1G1	40 X 60	단부	3-D22	227.19	0.70	D10@200	194.86	0.79	OK
			325.05			246.23			
		중앙부	6-D22	140.57	0.36	D10@250	120.61	0.54	OK
			386.40			223.26			
1G1A	50 X 50	단부	5-D22	61.14	0.14	D13@150	96.24	0.22	OK
			431.88			443.11			
		중앙부	7-D22	33.47	0.10	D13@200	52.34	0.14	OK
			348.34			370.70			
1G2	40 X 60	단부	3-D22	68.28	0.34	D10@250	90.01	0.40	OK
			200.44			223.26			
		중앙부	3-D22	33.21	0.17	D10@250	79.16	0.35	OK
			200.44			223.26			
1G3	40 X 70	단부	3-D22	123.90	0.52	D10@200	110.51	0.38	OK
			237.56			289.13			
		중앙부	3-D22	70.13	0.30	D10@200	66.15	0.23	OK
			237.56			289.13			
1G3A	50 x 50	단부	5-D22	35.78	0.10	D13@150	40.56	0.12	OK
			348.34			343.90			
		중앙부	5-D22	14.96	0.06	D13@200	27.45	0.09	OK
			262.95			299.56			
1G4	40 x 70	단부	3-D22	39.29	0.17	D10@200	51.14	0.18	OK
			237.56			289.13			
		중앙부	3-D22	18.66	0.08	D10@200	33.85	0.12	OK
			237.56			289.13			

<표 5.4> 보 내력검토(의사숙소) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
1G4A	40 X 50	단부	5-D22	21.81	0.06	D13@150	30.01	0.09	OK
			344.25			318.00			
		중앙부	5-D22	8.03	0.03	D13@200	24.62	0.09	OK
			259.24			272.83			
1G5	40 X 70	단부	3-D22	323.08	0.62	D10@150	242.01	0.74	OK
			518.09			326.91			
		중앙부	5-D22	192.63	0.50	D10@200	213.76	0.74	OK
			385.45			289.13			
1G6	40 X 70	단부	3-D22	99.36	0.42	D10@200	85.37	0.30	OK
			237.56			289.13			
		중앙부	3-D22	0.00	0.00	D10@250	57.71	0.22	OK
			237.56			262.17			
1G7	40 X 50	단부	3-D22	102.54	0.40	D13@200	104.84	0.38	OK
			259.24			272.83			
		중앙부	5-D22	62.14	0.0.24	D13@200	91.32	0.33	OK
			259.24			272.83			
1G8	40 X 70	단부	3-D22	123.45	0.52	D10@200	97.37	0.34	OK
			237.56			289.13			
		중앙부	3-D22	63.37	0.27	D10@250	53.37	0.20	OK
			237.56			262.17			
1G9	40 X 70	단부	3-D22	15.03	0.06	D10@200	31.39	0.11	OK
			237.56			289.13			
		중앙부	3-D22	7.42	0.03	D10@250	15.64	0.06	OK
			237.56			262.17			
1G10	40 X 70	단부	3-D22	56.61	0.24	D10@200	56.13	0.19	OK
			237.56			289.13			
		중앙부	3-D22	28.73	0.12	D10@250	32.24	0.12	OK
			237.56			262.17			

<표 5.4> 보 내력검토(의사숙소) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
1G11	40 X 70	단부	3-D22	223.82	0.58	D10@200	173.75	0.60	OK
			385.45			289.13			
		중앙부	5-D22	124.27	0.32	D10@250	99.80	0.38	OK
			385.45			262.17			
1G12	40 X 70	단부	3-D22	77.68	0.33	D10@200	76.23	0.26	OK
			237.56			289.13			
		중앙부	3-D22	2.13	0.01	D10@250	48.57	0.19	OK
			237.56			262.17			
1G13	40 X 50	단부	3-D22	88.74	0.34	D10@200	88.44	0.44	OK
			259.24			200.33			
		중앙부	3-D22	49.49	0.31	D10@200	51.80	0.26	OK
			160.95			200.33			
1B1	40 X 50	단부	3-D22	331.79	0.76	D10@200	240.80	1.003	SAY OK
			434.29			240.03			
		중앙부	5-D22	187.57	0.57	D10@250	160.22	0.72	OK
			325.05			223.26			
1B3	40 X 50	단부	3-D22	32.99	0.21	D10@200	63.89	0.32	OK
			160.95			200.33			
		중앙부	3-D22	53.00	0.33	D10@200	45.74	0.23	OK
			160.95			200.33			
1B4	40 X 50	단부	3-D22	22.58	0.87	D10@150	43.26	0.19	OK
			259.24			231.46			
		중앙부	5-D22	12.20	0.05	D10@200	24.29	0.12	OK
			259.24			203.33			

※ SAY O.K : ① 응력 재분배로 인하여 내력에 문제가 없다고 판단되는 부재

② 부족한 내력이 미소하여 실제 작용하중과 하중기준상 적재하중의 차이를 고려할 경우 별도의 보강을 하지 않아도 구조적으로 문제가 없다고 판단되는 부재

<표 5.4> 보 내력검토(의사숙소) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G1	40 X 80	단부	5-D22	177.82	0.21	D13@150	182.34	0.35	OK
			835.13			526.37			
		중앙부	7-D22	170.28	0.28	D13@200	1711.88	0.38	OK
			602.47			452.41			
2G1A	40 X 80	단부	5-D22	19.99	0.02	D13@125	42.62	0.05	OK
			990.27			810.26			
		중앙부	12-D22	22.72	0.02	D13@150	31.66	0.05	OK
			990.27			727.52			
2G2	40 X 70	단부	3-D22	19.01	0.05	D13@200	35.38	0.09	OK
			385.45			393.78			
		중앙부	3-D22	16.71	0.07	D13@250	31.94	0.09	OK
			237.57			345.89			
2G3	40 X 70	단부	3-D22	195.02	0.38	D13@150	270.63	0.58	OK
			518.09			463.46			
		중앙부	7-D22	305.58	0.60	D13@200	258.37	0.66	OK
			518.09			393.78			
2G3A	40 X 90	단부	5-D22	22.70	0.02	D13@100	33.87	0.04	OK
			966.76			804.32			
		중앙부	10-D22	17.22	0.02	D13@125	28.89	0.04	OK
			966.76			702.79			
2G4	40 X 90	단부	3-D22	45.59	0.09	D13@250	51.40	0.11	OK
			512.10			452.29			
		중앙부	3-D22	29.72	0.09	D13@250	48.28	0.11	OK
			314.39			452.29			
2G5	50 X 90	단부	6-D22	455.66	0.39	D13@125	315.26	0.43	OK
			1161.84			731.66			
		중앙부	12-D22	351.36	0.30	D13@150	291.47	0.44	OK
			1161.84			669.74			

<표 5.4> 보 내력검토(의사숙소) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G6	50 X 90	단부	6-D22	161.91	0.20	D13@250	63.25	0.13	OK
			799.61			495.53			
		중앙부	6-D22	0.00	0.00	D13@250	41.35	0.08	OK
			614.18			495.53			
2G7	50 X 90	단부	4-D22	168.91	0.27	D13@150	184.50	0.28	OK
			615.54			669.74			
		중앙부	8-D22	180.28	0.23	D13@200	168.45	0.30	OK
			798.90			565.37			
2G8	50 X 90	단부	4-D22	447.26	0.56	D13@150	531.95	0.81	OK
			798.90			659.14			
		중앙부	6-D22	392.78	0.64	D13@200	523.81	0.93	OK
			615.54			565.37			
2G8A	40 X 90	단부	3-D22	199.26	0.39	D13@250	156.35	0.35	OK
			512.10			452.29			
		중앙부	3-D22	111.24	0.35	D13@250	143.55	0.32	OK
			314.39			452.29			
2G9	50 X 90	단부	4-D22	158.39	0.26	D13@200	146.49	0.26	OK
			615.54			565.37			
		중앙부	4-D22	2.31	0.01	D13@200	144.35	0.26	OK
			417.91			565.37			
2G10	50 X 90	단부	4-D22	40.52	0.07	D13@200	193.66	0.34	OK
			615.47			565.37			
		중앙부	6-D22	45.80	0.07	D13@250	191.04	0.38	OK
			615.47			502.74			
2G13	50 X 90	단부	4-D22	446.41	0.56	D13@200	305.21	0.55	OK
			798.90			557.26			
		중앙부	8-D22	349.83	0.44	D13@250	282.51	0.56	OK
			798.90			502.74			

<표 5.4> 보 내력검토(의사숙소) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
2G14	50 X 90	단부	4-D22	165.36	0.27	D13@200	67.39	0.12	OK
			615.54			565.37			
		중앙부	4-D22	0.00	0.00	D13@200	46.40	0.08	OK
			417.91			565.37			
2G15	50 X 90	단부	4-D22	122.21	0.20	D13@200	139.48	0.25	OK
			615.54			565.37			
		중앙부	6-D22	132.80	0.22	D13@250	122.80	0.24	OK
			615.54			502.74			
2B1	40 X 80	단부	5-D22	202.97	0.21	D13@125	304.69	0.51	OK
			990.27			597.34			
		중앙부	8-D22	387.74	0.57	D13@150	298.60	0.56	OK
			681.76			544.11			
2B2	40 X 70	단부	3-D22	14.64	0.04	D13@250	38.43	0.11	OK
			385.45			345.89			
		중앙부	5-D22	19.45	0.08	D13@250	35.25	0.10	OK
			237.57			345.89			
2B3	40 X 70	단부	3-D22	47.30	0.12	D13@200	191.09	0.49	OK
			385.45			393.78			
		중앙부	5-D22	195.93	0.51	D13@250	185.51	0.54	OK
			385.45			345.89			
2B4	40 X 70	단부	3-D22	23.07	0.06	D13@200	44.83	0.11	OK
			385.45			393.78			
		중앙부	7-D22	12.13	0.02	D13@250	24.68	0.07	OK
			518.09			338.48			
2B5	30 X 50	단부	3-D22	52.40	0.33	D13@250	53.55	0.25	OK
			157.74			212.92			
		중앙부	3-D22	17.73	0.11	D13@250	42.56	0.20	OK
			157.74			212.92			

<표 5.4> 보 내력검토(의사숙소) (계속)

fck=24MPa, fy=400MPa

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
3G1	20 X 40	단부	4-D16	42.46	0.57	D10@250	44.06	0.47	OK
			74.68			92.82			
		중앙부	4-D16	33.03	0.44	D10@250	32.75	0.35	OK
			74.68			92.82			
3G2	20 X 50	단부	2-D16	42.17	0.74	D10@250	35.74	0.28	OK
			56.83			128.19			
		중앙부	2-D16	16.39	0.29	D10@250	30.36	0.24	OK
			56.83			128.19			
3G3	20 X 40	단부	2-D16	32.28	0.43	D10@250	42.34	0.46	OK
			75.20			92.82			
		중앙부	2-D16	37.44	0.83	D10@250	39.51	0.43	OK
			45.19			92.82			
3B1	30 X 50	단부	3-D19	1.29	0.01	D10@250	52.74	0.34	OK
			119.24			155.92			
		중앙부	3-D19	61.09	0.51	D10@250	49.01	0.32	OK
			119.24			155.92			
4G1	20 X 40	단부	2-D16	43.81	0.58	D10@250	46.07	0.50	OK
			75.20			92.82			
		중앙부	2-D16	34.40	0.76	D10@250	34.05	0.37	OK
			45.19			92.82			
4G2	20 X 50	단부	2-D16	43.89	0.77	D10@250	37.64	0.29	OK
			56.83			128.29			
		중앙부	2-D16	17.00	0.30	D10@250	31.92	0.25	OK
			56.83			128.29			
4G3	20 X 40	단부	2-D16	35.09	0.47	D10@250	45.56	0.49	OK
			75.20			92.82			
		중앙부	2-D16	39.21	0.87	D10@250	42.53	0.46	OK
			45.19			92.82			

<표 5.4> 보 내력검토(의사숙소) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	위 치	모멘트(M)(kN/m)			전단력(S)(kN)			판정
			배근량	소요M	소요M	배근량	소요S	소요S	
			저항M		저항M	저항S		저항S	
RG1	20 X 40	단부	4-D16	43.67	0.58	D10@250	46.00	0.50	OK
			74.68			92.82			
		중앙부	4-D16	34.36	0.46	D10@250	33.98	0.37	OK
			74.68			92.82			
RG2	20 X 50	단부	2-D16	42.17	0.74	D10@250	36.42	0.28	OK
			56.83			138.19			
		중앙부	2-D16	15.70	0.28	D10@250	30.70	0.24	OK
			56.83			138.19			
RG3	20 X 40	단부	2-D16	35.70	0.47	D10@250	46.04	0.50	OK
			75.20			92.82			
		중앙부	2-D16	39.74	0.88	D10@250	43.00	0.46	OK
			45.19			92.82			

5.3 기둥 내력검토

<표 5.5> 기둥 내력검토(장례식장)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
BC7	40 X 50	12-4-D19	1905.56	20.9187	2800.23	129.296	0.68	0.16	OK
BC8	40 X 50	12-4-D19	594.019	57.5064	1888.13	182.869	0.32	0.31	OK
BC9	40 X 50	12-4-D19	443.390	20.6109	2669.96	123.725	0.17	0.17	OK
BC10	40 X 50	12-4-D19	211.019	51.2892	1121.26	272.450	0.19	0.19	OK
BC11	40 X 50	12-4-D19	210.359	26.1440	1902.82	236.576	0.11	0.11	OK
BC12	40 X 50	12-4-D19	339.662	23.7481	2530.68	177.260	0.13	0.13	OK
BC13	40 X 1750	26-4-D19	1075.27	415.689	6280.56	2428.38	0.17	0.17	OK
BC14	40 X 50	14-5-D19	306.333	27.2662	2408.41	214.308	0.13	0.13	OK
BC15	40 X 70	12-4-D19	621.781	37.0278	3648.87	254.403	0.17	0.15	OK
BC16	40 X 1000	14-4-D19	763.687	106.747	4604.62	643.860	0.17	0.17	OK
BC17	60 X 40	10-4-D19	554.675	13.7538	3111.45	126.204	0.18	0.11	OK
BC18	50 X 40	10-4-D19	339.301	11.7724	2687.13	114.081	0.13	0.10	OK
1C1기존	40 X 60	18-4-D19	267.301	71.6956	1132.05	302.697	0.24	0.24	OK
1C2기존	60 X 30	8-3-D19	918.506	52.5039	2133.30	121.710	0.43	0.43	OK
1C3기존	30 X 50	8-3-D19	475.028	20.9952	1959.41	86.5496	0.24	0.24	OK

<표 5.5> 기둥 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
1C4기존	40 X 60	16-3-D19	537.959	15.5676	3450.76	190.820	0.16	0.08	OK
1C5	350 X 1515	16-4-D19	15.5509	145.617	120.925	1134.04	0.13	0.13	OK
1C6	350 X 465	10-4-D19	25.313	3.97670	453.091	71.5159	0.06	0.06	OK
1C6A	350 X 485	10-4-D19	50.2869	61.1151	110.257	133.902	0.46	0.46	OK
1C7	40 X 50	12-4-D19	1633.40	20.6408	2800.23	134.997	0.58	0.15	OK
1C8	40 X 50	12-4-D19	357.878	86.8167	875.484	218.084	0.41	0.40	OK
1C9	40 X 50	12-4-D19	302.358	48.5794	1289.03	205.460	0.24	0.24	OK
1C10	40 X 50	12-4-D19	1002.02	71.9229	2521.13	181.013	0.40	0.40	OK
1C11	40 X 50	12-4-D19	532.624	32.3183	2651.55	161.150	0.20	0.20	OK
1C12	40 X 50	12-4-D19	362.126	25.1512	2493.35	173.177	0.15	0.15	OK
1C13	40 X 1750	26-4-D19	1375.78	183.299	8581.90	1141.65	0.16	0.16	OK
1C14	40 X 50	14-5-D19	384.013	32.3478	2467.11	207.606	0.16	0.16	OK
1C15	40 X 70	12-4-D19	384.256	11.6587	3648.87	144.861	0.11	0.08	OK
1C16	40 X 1000	14-4-D19	522.337	18.5815	5034.94	326.122	0.10	0.06	OK
1C17	50 X 40	10-4-D19	129.406	31.8958	948.285	242.075	0.14	0.13	OK

<표 5.5> 기둥 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
1C18	50 X 40	10-4-D19	330.397	13.0693	2687.13	127.574	0.12	0.10	OK
1C19	40 X 40	12-4-D19	8.49652	34.4623	43.0618	170.458	0.20	0.20	OK
1C20	40 X 40	12-4-D19	380.032	28.4959	1797.93	134.978	0.21	0.21	OK
1C21	40 X 50	12-4-D19	1031.17	15.7589	2800.23	133.543	0.37	0.12	OK
1C22	40 X 50	12-4-D19	289.966	30.8519	1759.53	187.290	0.17	0.17	OK
1C23	40 X 50	12-4-D19	31.618	6.60893	579.746	120.912	0.06	0.06	OK
2C1기존	40 X 60	18-4-D19	205.565	103.738	487.836	305.408	0.42	0.34	OK
2C2기존	60 X 30	8-3-D19	730.185	69.2276	1880.04	178.543	0.39	0.39	OK
2C3기존	30 X 50	8-3-D19	205.267	16.2168	1661.63	131.351	0.12	0.12	OK
2C4기존	40 X 60	16-3-D19	378.224	16.1100	3450.76	150.007	0.11	0.11	OK
2C7	40 X 50	12-4-D19	1180.91	29.2622	2800.23	129.814	0.42	0.23	OK
2C8	40 X 50	12-4-D19	905.195	75.6760	2061.57	172.136	0.44	0.44	OK
2C9	40 X 50	12-4-D19	173.862	59.2769	586.384	227.985	0.30	0.26	OK
2C10	40 X 50	12-4-D19	740.188	63.9146	2325.66	200.994	0.32	0.32	OK
2C11	40 X 50	12-4-D19	260.983	38.3094	1319.15	196.242	0.20	0.20	OK

<표 5.5> 기둥 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
2C12	40 X 50	12-4-D19	277.835	25.0972	2191.05	198.100	0.13	0.13	OK
2C13	40 X 1750	26-4-D19	809.400	269.075	5918.76	1967.76	0.14	0.14	OK
2C14	40 X 50	14-5-D19	477.122	45.3444	2294.35	218.030	0.21	0.21	OK
2C15	40 X 70	12-4-D19	226.356	21.0691	2712.81	252.852	0.08	0.08	OK
2C16	40 X 1000	14-4-D19	354.621	13.4591	5034.94	201.138	0.07	0.07	OK
2C17	60 X 40	10-4-D19	105.453	46.7411	490.461	216.908	0.22	0.22	OK
2C18	50 X 40	10-4-D19	171.387	7.71592	2687.13	130.951	0.06	0.06	OK
2C19	40 X 40	12-4-D19	88.2882	69.3309	251.316	195.115	0.35	0.36	OK
2C20	40 X 40	12-4-D19	444.118	27.7716	2004.41	125.625	0.22	0.22	OK
2C21	40 X 50	12-4-D19	577.726	76.0868	1756.41	232.486	0.33	0.33	OK
2C22	40 X 50	12-4-D19	479.358	47.5020	1871.97	185.459	0.26	0.26	OK
3C1	40 X 60	18-4-D19	157.038	136.715	318.047	289.904	0.49	0.47	OK
3C2	60 X 30	8-3-D19	433.128	76.5030	1355.58	239.145	0.32	0.32	OK
3C3	60 X 40	8-3-D19	104.688	39.0437	557.214	208.005	0.19	0.19	OK
3C4	60 X 40	16-6-D22	219.701	25.5343	2886.88	335.552	0.08	0.08	OK

<표 5.5> 기둥 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
3C7증축	50 X 40	12-4-D19	766.896	28.9847	2800.23	130.992	0.24	0.22	OK
3C8증축	50 X 40	12-4-D19	594.117	106.622	1432.42	257.039	0.42	0.42	OK
3C9	50 X 40	12-4-D19	129.536	87.4352	425.424	289.221	0.30	0.30	OK
3C10증축	50 X 40	12-4-D19	216.917	64.8275	733.846	230.882	0.30	0.28	OK
3C11증축	50 X 40	12-4-D19	171.620	57.0376	640.761	231.822	0.27	0.25	OK
3C12증축	50 X 40	12-4-D19	181.780	20.8094	1655.57	189.119	0.11	0.11	OK
3C13증축	40 X 1750	30-4-D19	527.927	209.368	5165.03	2046.29	0.10	0.10	OK
3C14증축	50 X 40	14-4-D19	112.312	45.9897	471.863	232.345	0.24	0.20	OK
3C15	70 X 40	12-4-D19	163.037	21.8429	2081.26	278.102	0.08	0.08	OK
3C16	40 X 1000	14-5-D19	221.718	17.9072	4216.81	342.071	0.05	0.05	OK
3C17	40 X 60	10-3-D19	55.1990	32.4779	337.189	197.771	0.16	0.16	OK
3C18	40 X 50	10-3-D19	104.336	5.69864	2606.97	142.576	0.04	0.04	OK
3C19	40 X 40	12-4-D19	92.6877	69.2935	265.398	195.903	0.35	0.35	OK
3C20	40 X 40	12-4-D19	150.693	42.5094	708.994	202.144	0.21	0.21	OK
3C21	50 X 40	12-4-D19	249.257	72.1018	601.258	207.450	0.42	0.35	OK

<표 5.5> 기둥 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
3C22	50 X 40	12-4-D19	317.345	57.0857	1188.32	212.145	0.27	0.27	OK
4C1	40 X 60	18-4-D19	60.8060	151.837	106.612	267.491	0.57	0.57	OK
4C2	60 X 30	8-3-D19	244.338	33.2971	1045.60	142.962	0.23	0.23	OK
4C3	60 X 40	8-3-D19	61.7815	37.7309	269.725	166.420	0.23	0.23	OK
4C4	60 X 40	16-6-D19	55.4585	18.4120	990.286	329.736	0.06	0.06	OK
4C7	50 X 40	12-4-D19	345.798	40.2815	1806.73	210.391	0.19	0.19	OK
4C8	50 X 40	12-4-D19	256.856	106.409	693.788	288.324	0.37	0.37	OK
4C9	50 X 40	12-4-D19	77.7687	86.7359	225.598	261.492	0.35	0.33	OK
4C10	50 X 40	12-4-D19	68.4548	75.7149	174.839	192.460	0.39	0.39	OK
4C11	50 X 40	12-4-D19	62.902	161.611	74.3113	194.103	0.39	0.38	OK
4C12	50 X 40	12-4-D19	57.1840	21.7824	469.975	219.511	0.12	0.10	OK
4C13	40 X 1750	30-4-D19	276.264	222.838	2949.06	2541.53	0.09	0.09	OK
4C14	50 X 40	14-4-D19	10.818	52.8828	38.7769	188.597	0.28	0.28	OK
4C15	70 X 40	12-4-D19	83.4188	23.9525	971.158	286.500	0.09	0.08	OK
4C16	40 X 1000	14-5-D19	81.5302	28.9684	1179.53	423.998	0.07	0.07	OK

<표 5.5> 기둥 내력검토(장례식장) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
4C17	40 X 60	10-3-D19	29.3933	46.0014	110.789	167.571	0.27	0.27	OK
4C18	40 X 50	10-3-D19	49.6145	2.61464	2631.27	138.844	0.02	0.02	OK
4C19	40 X 40	12-4-D19	38.4173	76.3546	90.3737	179.268	0.43	0.43	OK
4C20	40 X 40	12-4-D19	59.2601	40.7434	290.454	197.068	0.20	0.21	OK
4C21	50 X 40	12-4-D19	102.487	81.6268	274.993	202.286	0.37	0.40	OK
4C22	507 X 40	12-4-D19	129.261	65.8178	437.983	216.121	0.30	0.31	OK

<표 5.6> 기둥 내력검토(의사속소)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
BC1	50 X 70	12-4-D22	2619.19	49.7317	4629.73	332.228	0.57	0.15	OK
BC2	50 X 60	12-4-D22	482.015	38.2490	3811.02	302.537	0.13	0.13	OK
BC3	50 X 70	12-4-D22	495.609	117.146	2603.65	615.807	0.19	0.19	OK
BC4	50 X 70	12-4-D22	572.801	86.3122	2739.85	413.185	0.21	0.21	OK
BC5	50 X 60	12-4-D22	335.946	32.0419	3551.63	339.020	0.10	0.10	OK
BC6	50 X 70	12-4-D22	49.213	35.9842	461.570	335.774	0.11	0.11	OK
BC7	50 X 70	12-4-D22	892.155	27.3172	4629.73	230.648	0.19	0.12	OK
BC8	50 X 60	12-4-D22	566.434	21.9338	4099.33	248.270	0.14	0.09	OK
BC9	50 X 70	12-4-D22	740.881	43.2881	4629.73	331.688	0.16	0.13	OK
BC10	50 X 60	12-4-D22	1816.09	13.7948	4099.33	247.338	0.44	0.06	OK
BC11	50 X 60	12-4-D22	525.842	34.2402	4017.96	262.170	0.13	0.13	OK
BC12	50 X 60	12-4-D22	400.364	50.2780	2749.51	345.545	0.15	0.15	OK
BC13	50 X 60	12-4-D22	713.510	30.5977	4099.33	236.360	0.17	0.13	OK
BC14	50 X 70	12-4-D22	278.478	135.628	1483.03	740.069	0.19	0.18	OK
1C1	50 X 70	20-5-D22	1181.17	182.772	3193.47	492.745	0.37	0.37	OK
1C2	50 X 60	18-5-D22	2262.77	84.8794	4557.79	271.840	0.50	0.31	OK

<표 5.6> 기둥 내력검토(의사속소) (계속)

$f_{ck}=24\text{MPa}$, $f_y=400\text{MPa}$

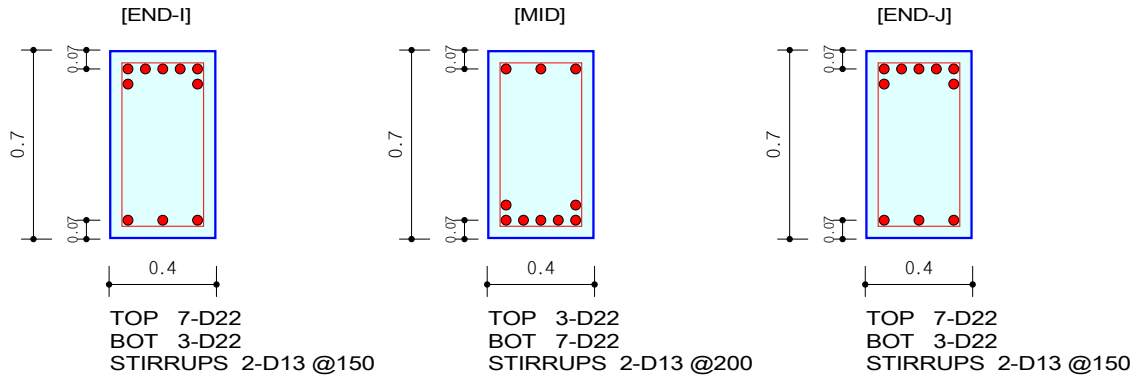
부재명	크기 (cm)	배근	소요강도		설계강도		내력비		판정
			Pu(kN)	Mu(kN·m)	$\phi P_n(\text{kN})$	$\phi M_n(\text{kN}\cdot\text{m})$	P	M	
1C3	50 X 70	18-5-D22	369.790	291.355	1086.08	858.226	0.34	0.34	OK
1C4	50 X 70	20-5-D22	1513.26	227.972	3191.69	481.954	0.47	0.47	OK
1C5	50 X 60	18-5-D22	837.73	168.818	2116.09	431.652	0.40	0.39	OK
1C6	50 X 70	18-5-D22	230.061	165.138	763.279	757.776	0.30	0.22	OK
1C7	50 X 70	20-5-D22	722.809	63.9281	4404.33	389.645	0.16	0.16	OK
1C8	50 X 60	16-5-D22	525.185	49.3329	3780.96	354.937	0.14	0.14	OK
1C9	50 X 70	18-5-D22	514.501	69.5579	4062.73	548.748	0.13	0.13	OK
1C10	50 X 60	18-5-D22	1477.39	43.3752	4557.79	273.730	0.32	0.16	OK
1C11	50 X 60	14-4-D22	415.511	47.4753	3311.30	378.792	0.13	0.13	OK
1C12	50 X 60	18-5-D22	919.345	188.472	2171.03	447.914	0.42	0.42	OK
1C13	50 X 60	16-5-D22	588.838	61.7358	3346.30	350.837	0.18	0.18	OK
1C14	50 X 70	20-5-D22	398.208	276.096	1138.13	854.481	0.35	0.32	OK

Certified by :

	Company		Project Title	
	Author		File Name	김천의료원 장례예식장증축관련 구조안전성검토_ver.11.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	$f_{ck} = 24000$, $f_y = 400000$, $f_{ys} = 400000$ KPa		
Section Property	2G3 (No : 304)	Beam Span	3m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	25	25	26
Moment (M_u)	195.02	22.99	42.62
Factored Strength (ϕM_n)	518.09	238.71	518.09
Check Ratio ($M_u/\phi M_n$)	0.3764	0.0963	0.0823
(+) Load Combination No.	26	26	26
Moment (M_u)	30.47	305.58	450.91
Factored Strength (ϕM_n)	238.71	518.09	238.71
Check Ratio ($M_u/\phi M_n$)	0.1277	0.5898	1.8889
Using Rebar Top (A_{s_top})	0.0027	0.0012	0.0027
Using Rebar Bot (A_{s_bot})	0.0012	0.0027	0.0012

3. Shear Capacity

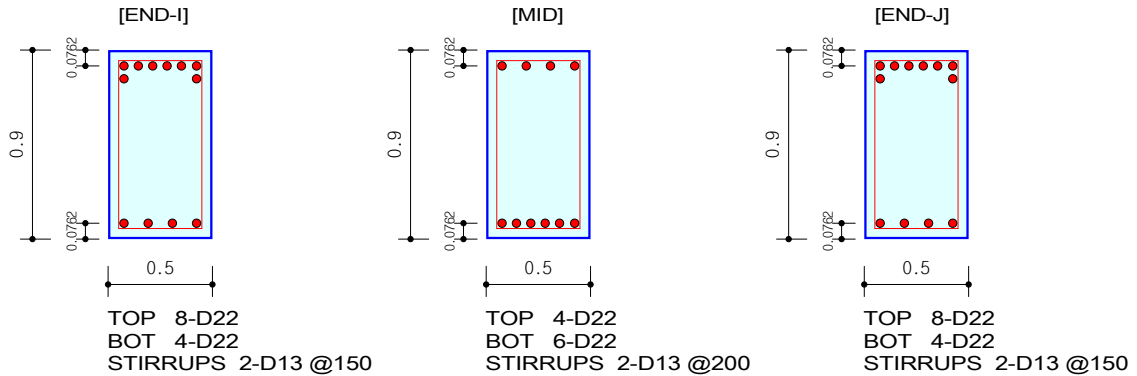
	END-I	MID	END-J
Load Combination No.	26	26	26
Factored Shear Force (V_u)	270.63	258.37	224.27
Shear Strength by Conc. (ϕV_c)	151.01	154.32	154.32
Shear Strength by Rebar. (ϕV_s)	312.45	239.46	319.28
Using Shear Reinf. ($A_s V$)	0.0017	0.0013	0.0017
Using Stirrups Spacing	2-D13 @150	2-D13 @200	2-D13 @150
Check Ratio	0.5839	0.6561	0.4735

Certified by :

	Company		Project Title	
	Author		File Name	김천의료원 장례예식장증축관련 구조안전성검토_ver.11.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	$f_{ck} = 24000$, $f_y = 400000$, $f_{ys} = 400000$ KPa		
Section Property	2G8 (No : 310)	Beam Span	1.8m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	26	6	24
Moment (M_u)	447.26	278.40	408.42
Factored Strength (ϕM_n)	798.90	417.91	798.90
Check Ratio ($M_u/\phi M_n$)	0.5598	0.6662	0.5112
(+) Load Combination No.	24	26	26
Moment (M_u)	430.29	392.78	606.87
Factored Strength (ϕM_n)	419.19	615.54	419.19
Check Ratio ($M_u/\phi M_n$)	1.0265	0.6381	1.4477
Using Rebar Top (A_{s_top})	0.0031	0.0015	0.0031
Using Rebar Bot (A_{s_bot})	0.0015	0.0023	0.0015

3. Shear Capacity

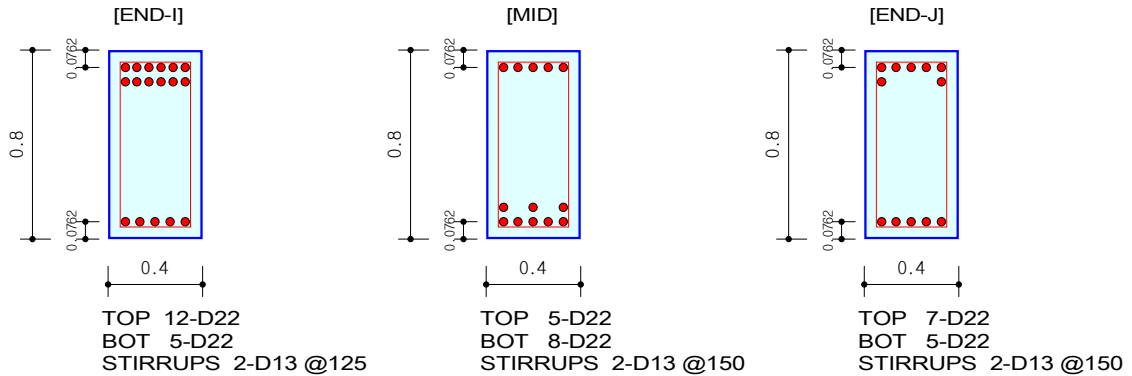
	END-I	MID	END-J
Load Combination No.	26	26	26
Factored Shear Force (V_u)	531.95	523.81	507.54
Shear Strength by Conc. (ϕV_c)	248.62	252.24	252.24
Shear Strength by Rebar. (ϕV_s)	411.52	313.13	417.50
Using Shear Reinf. ($A_s V$)	0.0017	0.0013	0.0017
Using Stirrups Spacing	2-D13 @150	2-D13 @200	2-D13 @150
Check Ratio	0.8058	0.9265	0.7578

Certified by :

	Company		Project Title	
	Author		File Name	김천의료원 장례예식장증축관련 구조안전성검토_ver.11.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	$f_{ck} = 24000$, $f_y = 400000$, $f_{ys} = 400000$ KPa		
Section Property	2B1 (No : 319)	Beam Span	3m

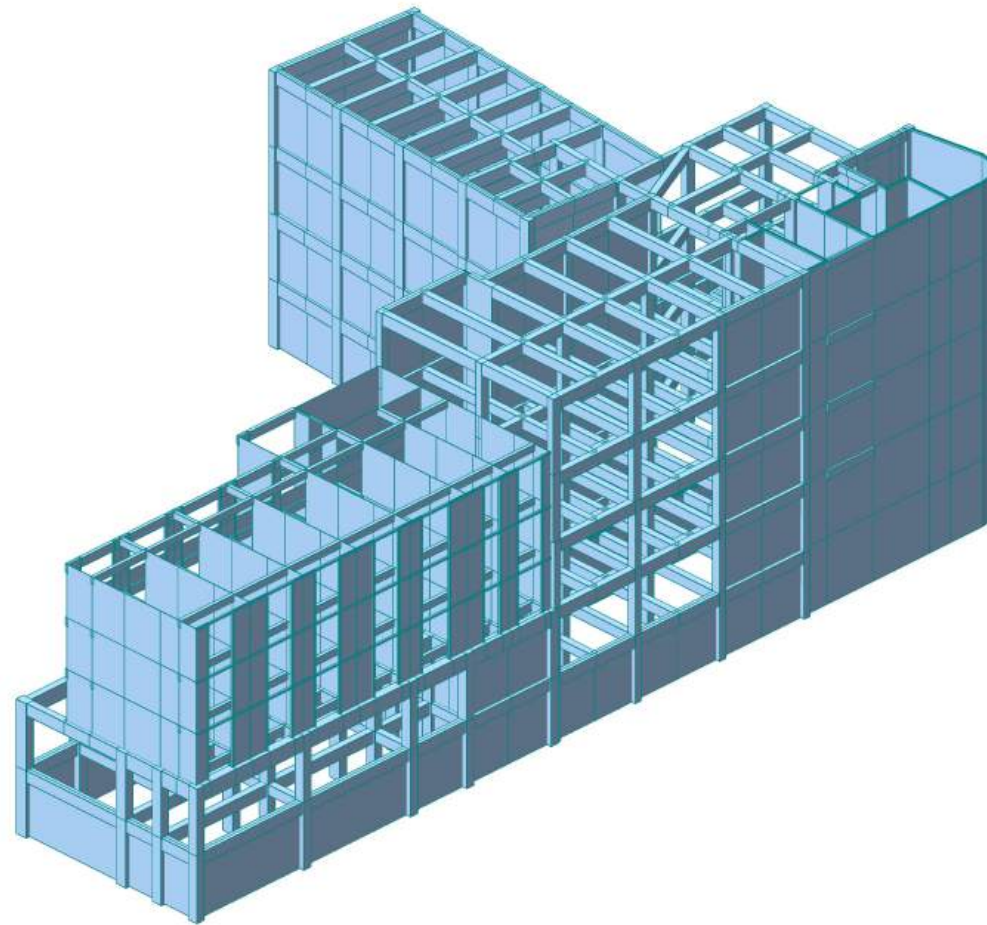


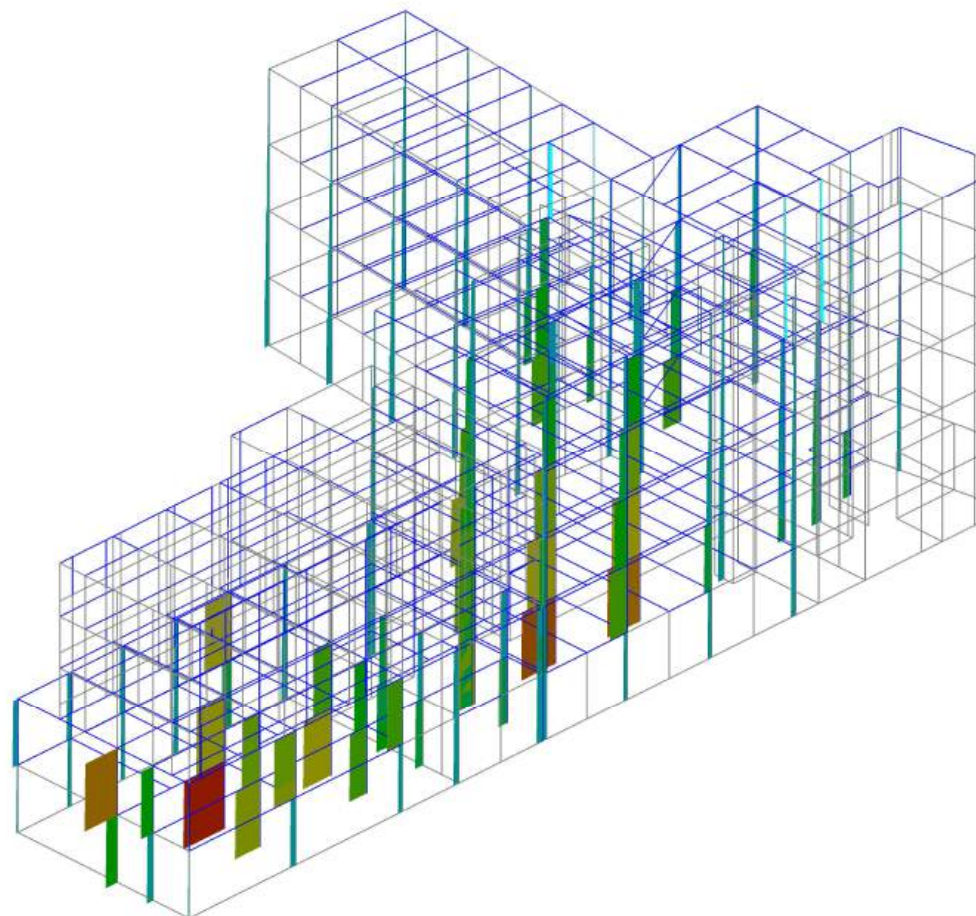
2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	25	25	24
Moment (M_u)	202.97	112.44	64.02
Factored Strength (ϕM_n)	990.27	444.59	603.82
Check Ratio ($M_u/\phi M_n$)	0.2050	0.2529	0.1060
(+) Load Combination No.	26	25	6
Moment (M_u)	164.87	387.74	500.64
Factored Strength (ϕM_n)	444.39	681.76	444.84
Check Ratio ($M_u/\phi M_n$)	0.3710	0.5687	1.1254
Using Rebar Top (A_{s_top})	0.0046	0.0019	0.0027
Using Rebar Bot (A_{s_bot})	0.0019	0.0031	0.0019

3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	25	25	25
Factored Shear Force (V_u)	304.69	298.60	278.37
Shear Strength by Conc. (ϕV_c)	171.51	172.96	177.29
Shear Strength by Rebar. (ϕV_s)	425.83	357.85	366.82
Using Shear Reinf. ($A_s V$)	0.0020	0.0017	0.0017
Using Stirrups Spacing	2-D13 @125	2-D13 @150	2-D13 @150
Check Ratio	0.5101	0.5625	0.5116

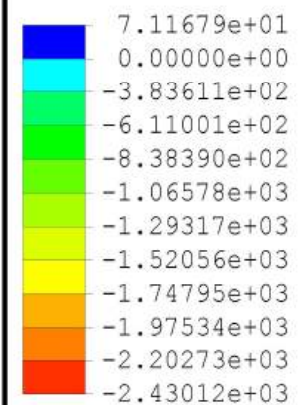




midas Gen
POST-PROCESSOR

BEAM DIAGRAM

AXIAL



CB: GLCB6

MAX : 1960

MIN : 470

FILE: 김천의료원 장

UNIT: kN

DATE: 04/04/2024

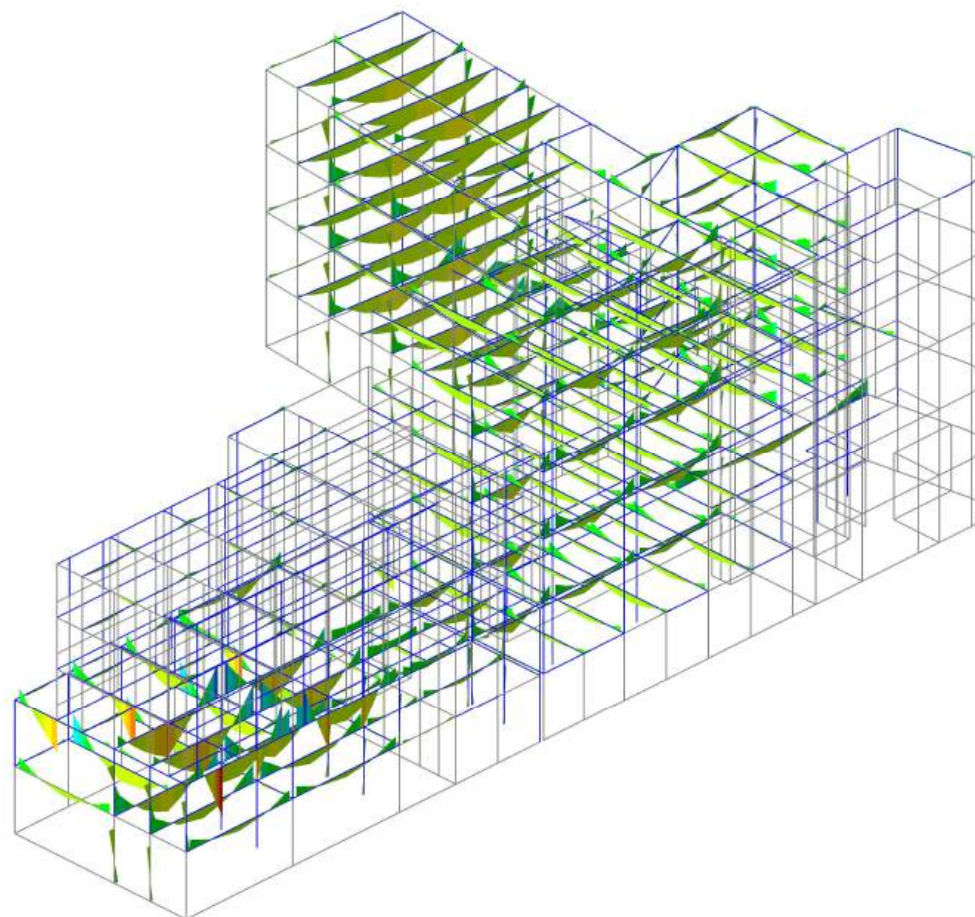
VIEW-DIRECTION

X: -0.612

Y: -0.612

Z: 0.500

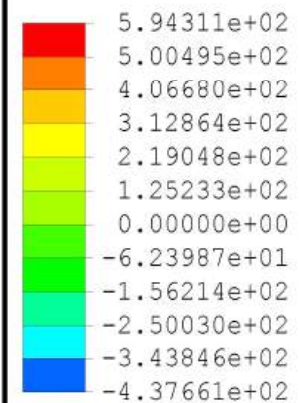




midas Gen
POST-PROCESSOR

BEAM DIAGRAM

MOMENT-y



CB: GLCB6

MAX : 1963

MIN : 2000

FILE: 김천의료원 장

UNIT: kN·m

DATE: 04/04/2024

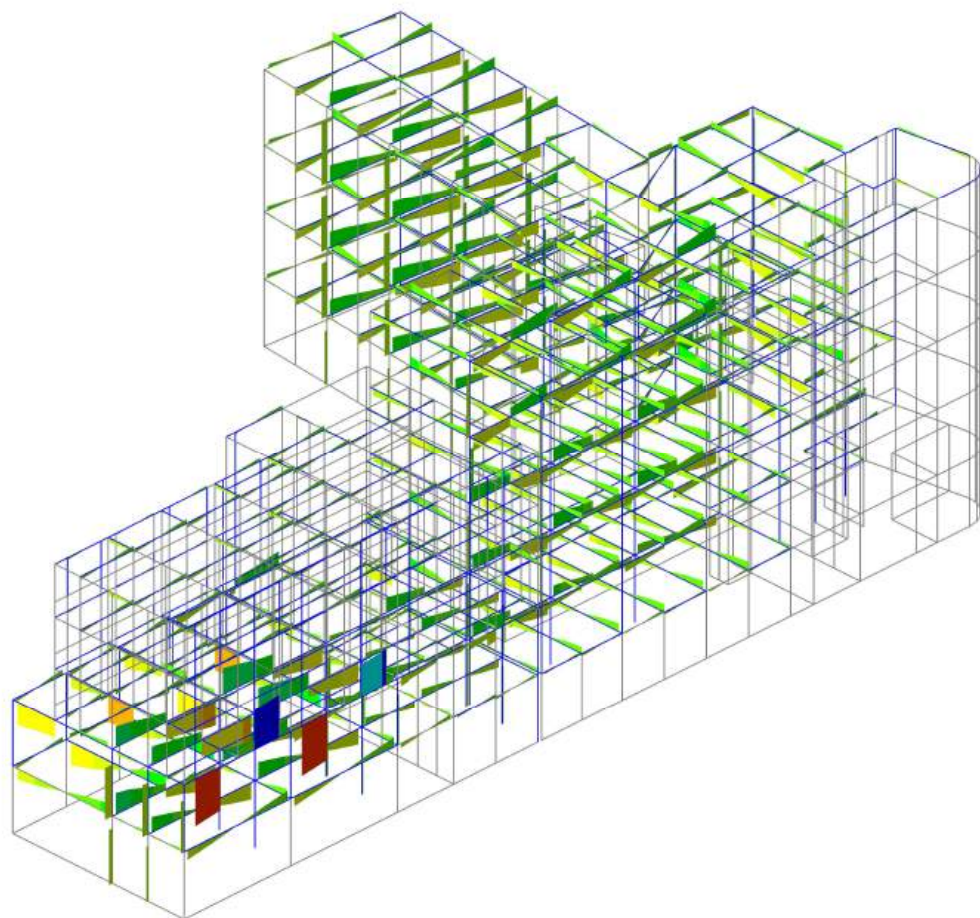
VIEW-DIRECTION

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Y: -0.612

Z: 0.500



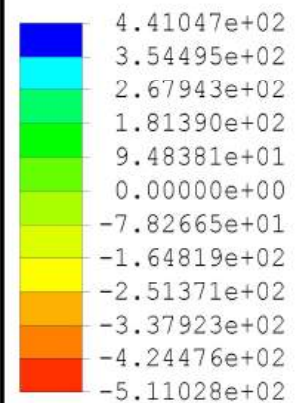


midas Gen

POST-PROCESSOR

BEAM DIAGRAM

SHEAR-z



CB: GLCB6

MAX : 1977

MIN : 2000

FILE: 김천의료원 장

UNIT: kN

DATE: 04/04/2024

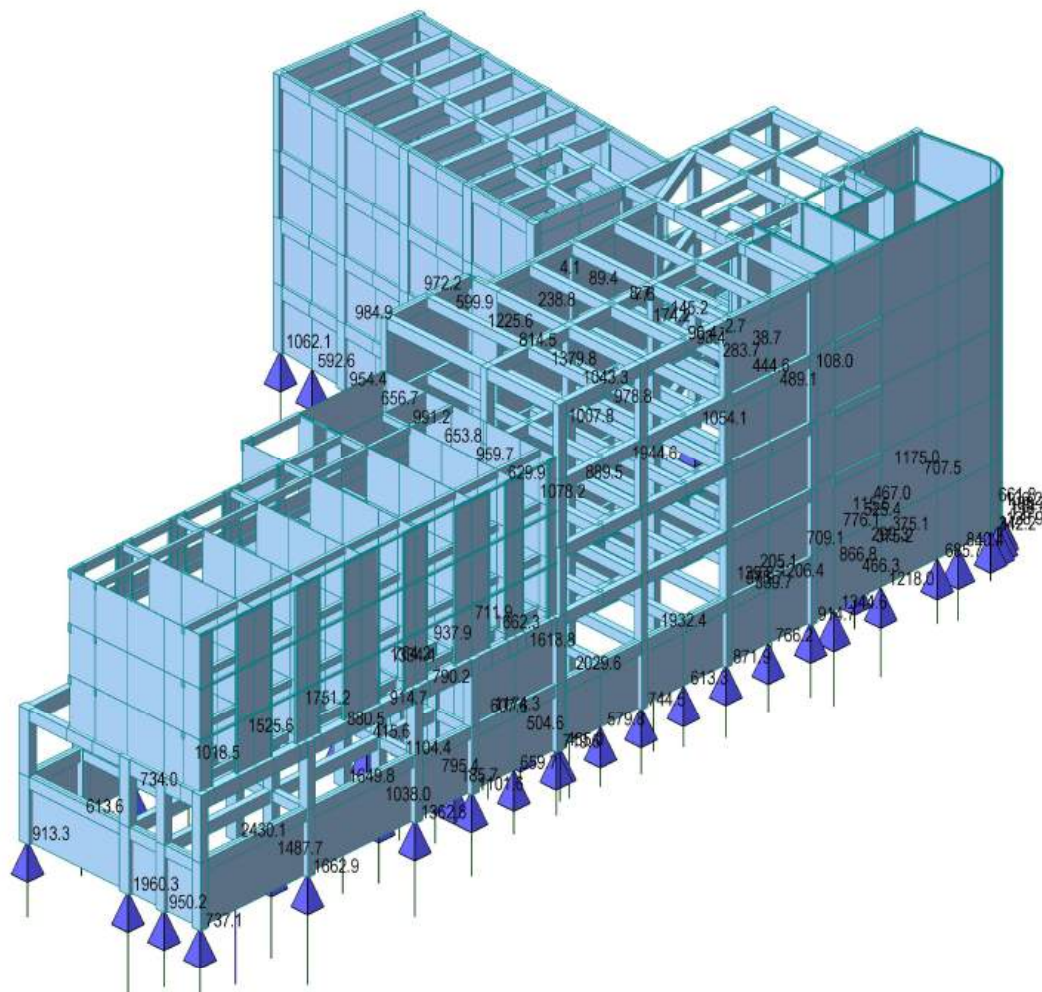
VIEW-DIRECTION

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Y: -0.612

Z: 0.500





midas Gen POST-PROCESSOR

REACTION FORCE

FORCE-Z

MIN. REACTION

NODE= 91
FZ: -2.7139E+00

MAX. REACTION

NODE= 298
FZ: 2.4301E+03

CB: GLCB6

MAX : 298
MIN : 91

FILE: 김천의료원 장

UNIT: kN

DATE: 04/04/2024

VIEW-DIRECTION

X: -0.612

Y: -0.612

Z: 0.500



■ Design Conditions ■

Design Code : KDS2021-CONC.
 Concrete $f_{ck} = 24 \text{ N/mm}^2$
 Re-bar $f_y = 400 \text{ N/mm}^2$
 Re-bar Clear Cover : $c_c = 80 \text{ mm}$

■ Slab Thk : 150 mm ■

Major Direction Moment (Unit : kN·m/m)

	@ 100	@ 120	@ 125	@ 150	@ 200	@ 300	@ 400	MinRatio
D10	14.1	12.0	11.6	9.8	7.5	5.1	3.8	@ 230
D10+D13	18.4	15.8	15.3	13.0	10.0	6.9	5.2	@ 330
D13	---	18.9	18.5	15.9	12.4	8.5	6.5	@ 420
D13+D16	---	---	---	18.5	15.2	10.6	8.1	@ 450
D16	---	---	---	---	17.7	12.5	9.7	@ 450

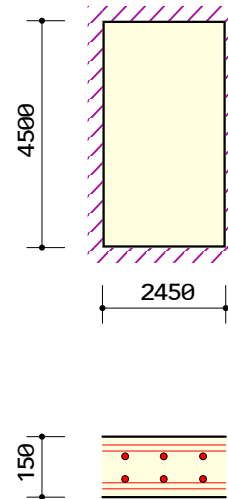
Minor Direction Moment (Unit : kN·m/m)

	@ 100	@ 120	@ 125	@ 150	@ 200	@ 300	@ 400	MinRatio
D10	11.4	9.8	9.4	8.0	6.1	4.2	3.2	@ 230
D10+D13	---	12.5	12.1	10.3	8.0	5.5	4.2	@ 330
D13	---	---	---	12.1	9.6	6.7	5.2	@ 420
D13+D16	---	---	---	---	11.3	8.1	6.3	@ 450
D16	---	---	---	---	---	9.3	7.2	@ 450

$\phi V_c = 39.0 \text{ kN/m}$

Design Conditions

Design Code : KDS2021-CONC.
Material & Dim.
Concrete $f_{ck} = 24 \text{ N/mm}^2$
Re-bar $f_y = 400 \text{ N/mm}^2$
Slab Dim. : 2450x4500x150 mm ($c_c=20\text{mm}$)
Edge Beam
UP = 400x800, DN = 400x700 mm
LT = 300x800, RT = 300x600 mm
Applied Loads
Dead Load $W_d = 5.38 \text{ kN/m}^2$
Live Load $W_l = 3.00 \text{ kN/m}^2$
 $W_u = 1.2 \times W_d + 1.6 \times W_l = 11.26 \text{ kN/m}^2$



Check Minimum Slab Thk.

$\beta = L_{ny}/L_{nx} = 1.9070$
 $h_{req} = l_n(800 + f_y/1.4)/(36000 + 9000\beta) = 84 \text{ mm}$
Thk = 150 > $T_{req} = 90 \text{ mm}$ ---> O.K.

Flexure Reinforcement

DIREC TION	Loca tion	Mu (kN·m/m)	ρ (%)	A _{st} (mm ² /m)	Spacing			
					D10	D10+D13	D13	D13+D16
Short	Cont	5.69	0.109	136	@300	@300	@300	@300
Span	Pos	3.17	0.060	75	@300	@300	@300	@300
Long	Cont	1.57	0.035	40	@300	@300	@300	@300
Span	Pos	0.94	0.021	24	@300	@300	@300	@300
Min Bar			0.200	300	@230	@330	@420	@450

Check Shear Strength

Strength Reduction Factor $\phi = 0.750$
Short Direction Shear
 $V_{ux} = 12.7 < \phi V_c = 76.2 \text{ kN/m} \text{ ---> O.K.}$
Long Direction Shear
 $V_{uy} = 2.0 < \phi V_c = 70.4 \text{ kN/m} \text{ ---> O.K.}$

Design Conditions

Design Code : KDS2021-CONC.

Slab Type : 1 Way

Material & Dim.

Concrete $f_{ck} = 24 \text{ N/mm}^2$

Re-bar $f_y = 400 \text{ N/mm}^2$

Slab Dim. : 2875x7100x150 mm ($c_c=20\text{mm}$)

Edge Beam

LT = 400x700, RT = 400x600 mm

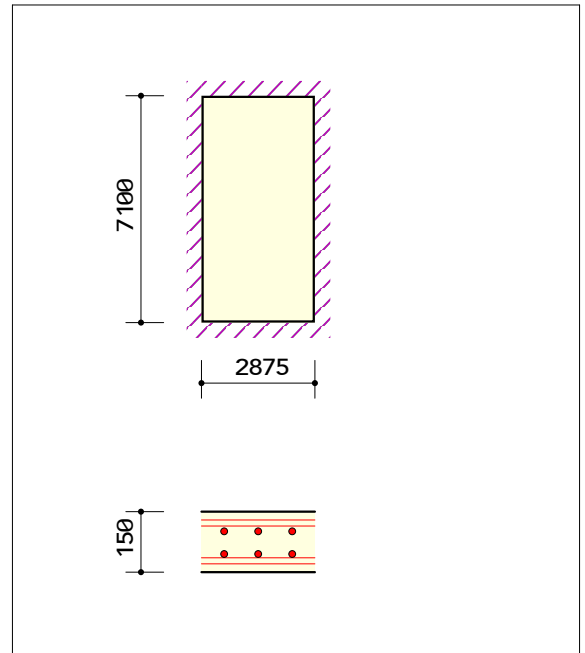
Applied Loads

Dead Load $W_d = 5.38 \text{ kN/m}^2$

Live Load $W_l = 3.00 \text{ kN/m}^2$
 $W_u = 1.2 \times W_d + 1.6 \times W_l = 11.26 \text{ kN/m}^2$

Check Minimum Slab Thk.

 $T_{req} = l_n / 28.0 = 103 \text{ mm}$

Thk = 150 > $T_{req} = 103 \text{ mm}$ ---> O.K.


Flexure Reinforcement

DIRECTION	Location	M_u (kN·m/m)	ρ (%)	A_{st} (mm ² /m)	Spacing			
					D10	D10+D13	D13	D13+D16
Short	Cont	7.75	0.149	186	@300	@300	@300	@300
Span	Pos	5.81	0.112	139	@300	@300	@300	@300
	Min Bar		0.200	300	@230	@236	@236	@236

Check Shear Strength

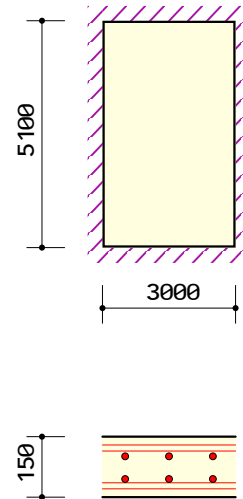
Strength Reduction Factor $\phi = 0.750$

Short Direction Shear

 $V_{ux} = 16.2 < \phi V_c = 76.2 \text{ kN/m}$ ---> O.K.

Design Conditions

Design Code : KDS2021-CONC.
Material & Dim.
 Concrete $f_{ck} = 24 \text{ N/mm}^2$
 Re-bar $f_y = 400 \text{ N/mm}^2$
 Slab Dim. : 3000x5100x150 mm ($c_c=20\text{mm}$)
 Edge Beam
 UP = 400x700, DN = 400x700 mm
 LT = 400x700, RT = 400x600 mm
Applied Loads
 Dead Load $W_d = 5.38 \text{ kN/m}^2$
 Live Load $W_l = 3.00 \text{ kN/m}^2$
 $W_u = 1.2 \times W_d + 1.6 \times W_l = 11.26 \text{ kN/m}^2$



Check Minimum Slab Thk.

$\beta = L_{ny}/L_{nx} = 1.8077$
 $h_{req} = l_n(800 + f_y/1.4)/(36000 + 9000\beta) = 98 \text{ mm}$
 Thk = 150 > $T_{req} = 98 \text{ mm}$ ---> O.K.

Flexure Reinforcement

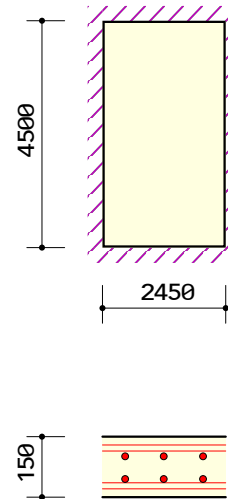
DIREC TION	Loca tion	M_u (kN·m/m)	ρ (%)	A_{st} (mm ² /m)	Spacing			
					D10	D10+D13	D13	D13+D16
Short	Cont	8.28	0.160	199	@300	@300	@300	@300
Span	Pos	4.54	0.087	108	@300	@300	@300	@300
Long	Cont	2.72	0.061	70	@300	@300	@300	@300
Span	Pos	1.48	0.033	38	@300	@300	@300	@300
Min Bar			0.200	300	@230	@330	@420	@450

Check Shear Strength

Strength Reduction Factor $\phi = 0.750$
Short Direction Shear
 $V_{ux} = 15.1 < \phi V_c = 76.2 \text{ kN/m}$ ---> O.K.
Long Direction Shear
 $V_{uy} = 3.0 < \phi V_c = 70.4 \text{ kN/m}$ ---> O.K.

Design Conditions

Design Code : KDS2021-CONC.
Material & Dim.
Concrete $f_{ck} = 24 \text{ N/mm}^2$
Re-bar $f_y = 400 \text{ N/mm}^2$
Slab Dim. : 2450x4500x150 mm ($c_c=20\text{mm}$)
Edge Beam
UP = 400x800, DN = 400x700 mm
LT = 300x800, RT = 300x600 mm
Applied Loads
Dead Load $W_d = 5.38 \text{ kN/m}^2$
Live Load $W_l = 3.00 \text{ kN/m}^2$
 $W_u = 1.2 \times W_d + 1.6 \times W_l = 11.26 \text{ kN/m}^2$



Check Minimum Slab Thk.

$\beta = L_{ny}/L_{nx} = 1.9070$
 $h_{req} = l_n(800 + f_y/1.4)/(36000 + 9000\beta) = 84 \text{ mm}$
Thk = 150 > $T_{req} = 90 \text{ mm}$ ---> O.K.

Flexure Reinforcement

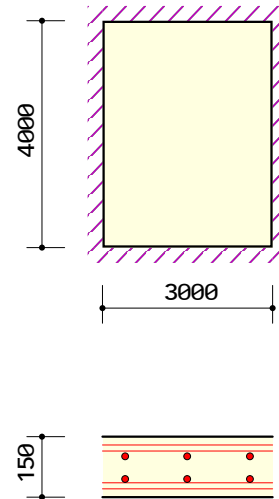
DIREC TION	Loca tion	M_u (kN·m/m)	ρ (%)	A_{st} (mm ² /m)	Spacing			
					D10	D10+D13	D13	D13+D16
Short	Cont	5.69	0.109	136	@300	@300	@300	@300
Span	Pos	3.17	0.060	75	@300	@300	@300	@300
Long	Cont	1.57	0.035	40	@300	@300	@300	@300
Span	Pos	0.94	0.021	24	@300	@300	@300	@300
Min Bar			0.200	300	@230	@330	@420	@450

Check Shear Strength

Strength Reduction Factor $\phi = 0.750$
Short Direction Shear
 $V_{ux} = 12.7 < \phi V_c = 76.2 \text{ kN/m} \text{ ---> O.K.}$
Long Direction Shear
 $V_{uy} = 2.0 < \phi V_c = 70.4 \text{ kN/m} \text{ ---> O.K.}$

Design Conditions

Design Code : KDS2021-CONC.
Material & Dim.
Concrete $f_{ck} = 24 \text{ N/mm}^2$
Re-bar $f_y = 400 \text{ N/mm}^2$
Slab Dim. : $3000 \times 4000 \times 150 \text{ mm}$ ($c_c=20\text{mm}$)
Edge Beam
UP = 200×500 , DN = $200 \times 400 \text{ mm}$
LT = 200×3000 , RT = $200 \times 3000 \text{ mm}$
Applied Loads
Dead Load $W_d = 5.38 \text{ kN/m}^2$
Live Load $W_l = 3.00 \text{ kN/m}^2$
 $W_u = 1.2 \times W_d + 1.6 \times W_l = 11.26 \text{ kN/m}^2$



Check Minimum Slab Thk.

$\beta = L_{ny}/L_{nx} = 1.3571$
 $h_{req} = l_n(800 + f_y/1.4)/(36000 + 9000\beta) = 86 \text{ mm}$
Thk = 150 > $T_{req} = 90 \text{ mm}$ ---> O.K.

Flexure Reinforcement

DIREC TION	Loca tion	M_u (kN·m/m)	ρ (%)	A_{st} (mm ² /m)	Spacing			
					D10	D10+D13	D13	D13+D16
Short	Cont	6.99	0.135	167	@300	@300	@300	@300
Span	Pos	3.57	0.068	85	@300	@300	@300	@300
Long	Cont	3.96	0.089	102	@300	@300	@300	@300
Span	Pos	2.00	0.045	52	@300	@300	@300	@300
Min Bar			0.200	300	@230	@330	@420	@450

Check Shear Strength

Strength Reduction Factor $\phi = 0.750$
Short Direction Shear
 $V_{ux} = 12.8 < \phi V_c = 76.2 \text{ kN/m}$ ---> O.K.
Long Direction Shear
 $V_{uy} = 5.4 < \phi V_c = 70.4 \text{ kN/m}$ ---> O.K.

■ Design Conditions ■

Design Code : KDS2021-CONC.

Slab Type : 1 Way

Material & Dim.

Concrete $f_{ck} = 24 \text{ N/mm}^2$

Re-bar $f_y = 400 \text{ N/mm}^2$

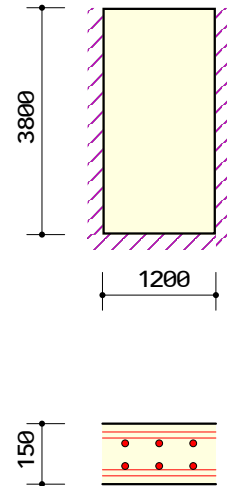
Slab Dim. : 1200x3800x150 mm ($c_c=20\text{mm}$)

Edge Beam

LT = 200x3000, RT= 200x3000 mm

Applied Loads

Dead Load $W_d = 5.38 \text{ kN/m}^2$

Live Load $W_l = 3.00 \text{ kN/m}^2$
 $W_u = 1.2 \times W_d + 1.6 \times W_l = 11.26 \text{ kN/m}^2$


■ Check Minimum Slab Thk. ■

 $T_{req} = l_n / 28.0 = 43 \text{ mm}$
 $T_{req} = \text{Max}[T_{req}, 100] = 100 \text{ mm}$
Thk = 150 > $T_{req} = 100 \text{ mm}$ ---> O.K.

■ Flexure Reinforcement ■

DIRECTION	Location	M_u (kN·m/m)	ρ (%)	A_{st} (mm ² /m)	Spacing			
					D10	D10+D13	D13	D13+D16
Short	Cont	1.35	0.026	32	@300	@300	@300	@300
Span	Pos	1.01	0.019	24	@300	@300	@300	@300
	Min Bar		0.200	300	@230	@236	@236	@236

■ Check Shear Strength ■

Strength Reduction Factor $\phi = 0.750$

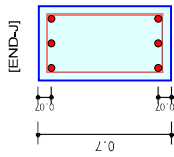
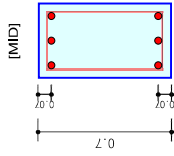
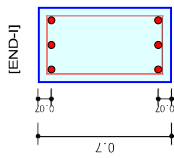
Short Direction Shear

 $V_{ux} = 6.8 < \phi V_c = 76.2 \text{ kN/m}$ ---> O.K.

Company		Project Title
Author		File Name
MIDAS		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1G1 (No : 199) Beam Span 7.10019m



TOP 3-D22
BOT 3-D22
STIRRUPS 2-D10 @200

TOP 3-D22
BOT 3-D22
STIRRUPS 2-D10 @200

TOP 3-D22
BOT 3-D22
STIRRUPS 2-D10 @200

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	112	81
Moment (Mu)	130.87	0.95	123.90
Factored Strength (ϕM_n)	237.56	237.56	237.56
Check Ratio ($M_u/\phi M_n$)	0.5509	0.0040	0.5216
(+) Load Combination No.	81	81	81
Moment (Mu)	16.33	70.13	19.81
Factored Strength (ϕM_n)	237.56	237.56	237.56
Check Ratio ($M_u/\phi M_n$)	0.0687	0.2952	0.0834
Using Rebar Top (As_top)	0.0012	0.0012	0.0012
Using Rebar Bot (As_bot)	0.0012	0.0012	0.0012

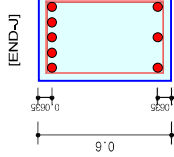
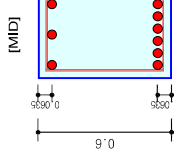
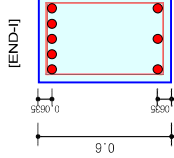
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	110.51	66.15	108.33
Shear Strength by Conc. (ϕV_c)	154.32	154.32	154.32
Shear Strength by Rebar. (ϕV_s)	134.81	134.81	134.81
Using Shear Reinf. (AsV)	0.0007	0.0007	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @200	2-D10 @200
Check Ratio	0.3822	0.2288	0.3747

Company		Project Title
Author		File Name
MIDAS		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1G1 (No : 196) Beam Span 7.10019m



TOP 5-D22
BOT 3-D22
STIRRUPS 2-D10 @200

TOP 3-D22
BOT 6-D22
STIRRUPS 2-D10 @250

TOP 5-D22
BOT 3-D22
STIRRUPS 2-D10 @200

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	112	81
Moment (Mu)	227.19	0.00	210.92
Factored Strength (ϕM_n)	325.05	200.39	325.05
Check Ratio ($M_u/\phi M_n$)	0.6989	0.0000	0.6489
(+) Load Combination No.	102	81	81
Moment (Mu)	44.53	140.57	52.76
Factored Strength (ϕM_n)	200.40	386.40	200.40
Check Ratio ($M_u/\phi M_n$)	0.2222	0.3638	0.2632
Using Rebar Top (As_top)	0.0019	0.0012	0.0019
Using Rebar Bot (As_bot)	0.0012	0.0023	0.0012

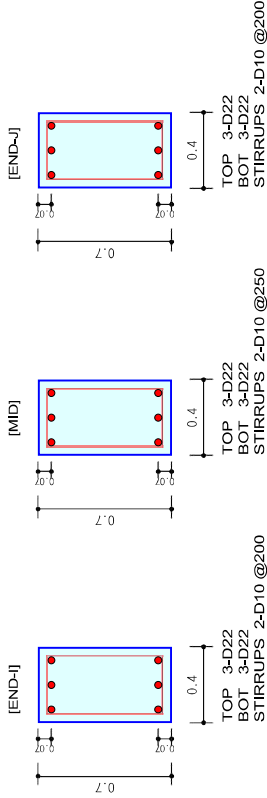
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	194.86	120.61	191.46
Shear Strength by Conc. (ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar. (ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.7914	0.5402	0.7776

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	7.6m
Section Property	1G5 (No : 207)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	114	81
Moment (Mu)	121.81	0.00	123.45
Factored Strength (φMn)	237.56	237.56	237.56
Check Ratio (Mu/φMn)	0.5128	0.0000	0.5196
(+) Load Combination No.	81	81	81
Moment (Mu)	16.43	63.37	16.26
Factored Strength (φMn)	237.56	237.56	237.56
Check Ratio (Mu/φMn)	0.0692	0.2667	0.0684
Using Rebar Top (As_top)	0.0012	0.0012	0.0012
Using Rebar Bot (As_bot)	0.0012	0.0012	0.0012

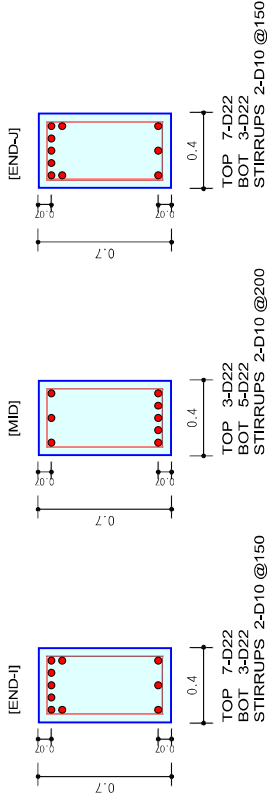
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	97.03	53.37	97.37
Shear Strength by Conc.(φVc)	154.32	154.32	154.32
Shear Strength by Rebar.(φVs)	134.81	107.85	134.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-010 @200	2-010 @250	2-010 @200
Check Ratio	0.3356	0.2036	0.3368

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	3.8m
Section Property	1G5 (No : 204)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	81	81
Moment (Mu)	323.08	119.06	321.03
Factored Strength (φMn)	518.09	237.57	518.09
Check Ratio (Mu/φMn)	0.6236	0.5012	0.6196
(+) Load Combination No.	81	81	81
Moment (Mu)	260.53	192.63	260.48
Factored Strength (φMn)	238.71	385.45	238.71
Check Ratio (Mu/φMn)	1.0914	0.4997	1.0912
Using Rebar Top (As_top)	0.0027	0.0012	0.0027
Using Rebar Bot (As_bot)	0.0012	0.0019	0.0012

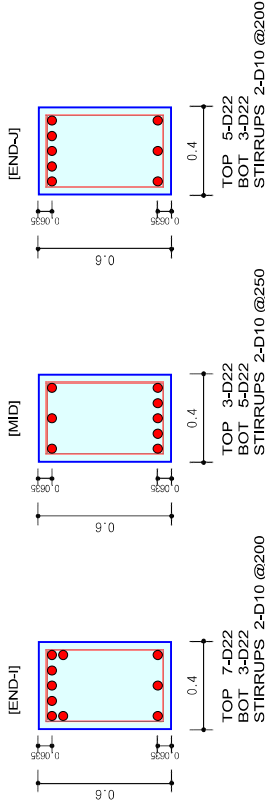
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	242.01	213.76	239.43
Shear Strength by Conc.(φVc)	151.01	154.32	151.01
Shear Strength by Rebar.(φVs)	175.90	134.81	175.90
Using Shear Reinf. (AsV)	0.0010	0.0007	0.0010
Using Stirrups Spacing	2-010 @150	2-010 @200	2-010 @150
Check Ratio	0.7403	0.7393	0.7324

Company		Project Title	
Author		File Name	
		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.10.mgb	

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1B1 (No : 213) Beam Span 7.10019m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	112	81
Moment (Mu)	331.79	1.31	60.57
Factored Strength (ϕM_n)	434.29	200.40	325.05
Check Ratio ($M_u/\phi M_n$)	0.7640	0.0065	0.1863
(+) Load Combination No.	102	81	81
Moment (Mu)	23.81	187.57	149.20
Factored Strength (ϕM_n)	201.22	325.05	200.40
Check Ratio ($M_u/\phi M_n$)	0.1184	0.5771	0.7445
Using Rebar Top (As_top)	0.0027	0.0012	0.0019
Using Rebar Bot (As_bot)	0.0012	0.0019	0.0012

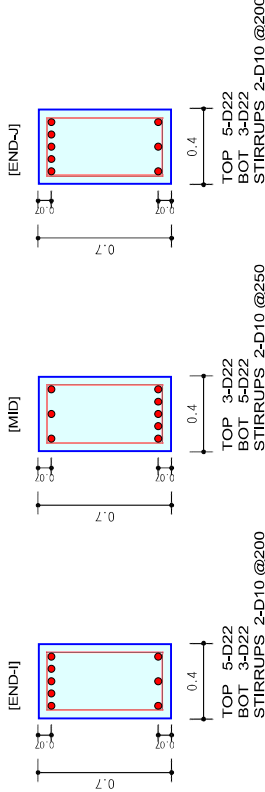
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	240.80	160.22	144.25
Shear Strength by Conc.(ϕV_c)	128.11	131.42	131.42
Shear Strength by Rebar.(ϕV_s)	111.92	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	1.0032	0.7176	0.5859

Company		Project Title	
Author		File Name	
		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.10.mgb	

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1G11 (No : 210) Beam Span 7.6m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	113	81
Moment (Mu)	223.82	0.00	222.12
Factored Strength (ϕM_n)	385.45	237.57	385.45
Check Ratio ($M_u/\phi M_n$)	0.5807	0.0000	0.5763
(+) Load Combination No.	81	81	81
Moment (Mu)	47.58	124.27	56.29
Factored Strength (ϕM_n)	237.57	385.45	237.57
Check Ratio ($M_u/\phi M_n$)	0.2003	0.3224	0.2369
Using Rebar Top (As_top)	0.0019	0.0012	0.0019
Using Rebar Bot (As_bot)	0.0012	0.0019	0.0012

3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	173.75	99.80	171.80
Shear Strength by Conc.(ϕV_c)	154.32	154.32	154.32
Shear Strength by Rebar.(ϕV_s)	134.81	107.85	134.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.6010	0.3807	0.5942

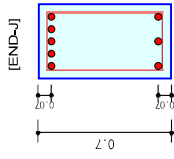
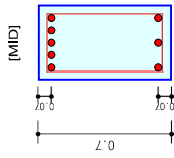
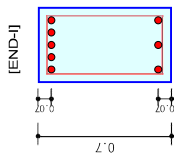
Certified by :

	Company	Project Title
	Author	
		File Name

김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 2G2 (No : 303) Beam Span 2.55m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	25	25	27
Moment (Mu)	19.01	7.40	8.81
Factored Strength (ϕM_n)	385.45	385.45	385.45
Check Ratio ($M_u/\phi M_n$)	0.0493	0.0192	0.0228
(+) Load Combination No.	27	27	27
Moment (Mu)	22.04	16.71	17.92
Factored Strength (ϕM_n)	237.57	237.57	237.57
Check Ratio ($M_u/\phi M_n$)	0.0928	0.0703	0.0754
Using Rebar Top (As_top)	0.0019	0.0019	0.0019
Using Rebar Bot (As_bot)	0.0012	0.0012	0.0012

3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	27	27
Factored Shear Force (Vu)	28.66	31.94	35.38
Shear Strength by Conc.(ϕV_c)	154.32	154.32	154.32
Shear Strength by Rebar.(ϕV_s)	239.46	191.57	239.46
Using Shear Reinf. (AsV)	0.0013	0.0010	0.0013
Using Stirrups Spacing	2-D13 @200	2-D13 @250	2-D13 @200
Check Ratio	0.0728	0.0923	0.0899

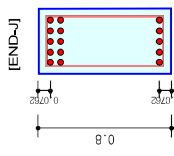
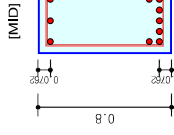
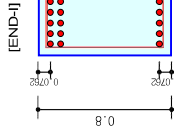
Certified by :

	Company	Project Title
	Author	
		File Name

김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 2G1 (No : 301) Beam Span 3m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	25	25	25
Moment (Mu)	177.82	62.90	30.78
Factored Strength (ϕM_n)	835.13	276.67	835.13
Check Ratio ($M_u/\phi M_n$)	0.2129	0.2274	0.0369
(+) Load Combination No.	26	25	25
Moment (Mu)	187.78	170.28	200.43
Factored Strength (ϕM_n)	444.43	602.47	444.43
Check Ratio ($M_u/\phi M_n$)	0.4225	0.2826	0.4510
Using Rebar Top (As_top)	0.0039	0.0012	0.0039
Using Rebar Bot (As_bot)	0.0019	0.0027	0.0019

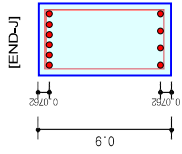
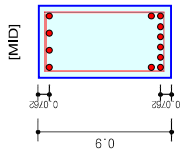
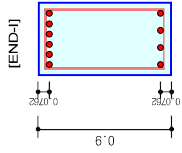
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	25	25	25
Factored Shear Force (Vu)	182.34	171.88	151.65
Shear Strength by Conc.(ϕV_c)	171.51	177.29	177.29
Shear Strength by Rebar.(ϕV_s)	354.86	275.12	366.82
Using Shear Reinf. (AsV)	0.0017	0.0013	0.0017
Using Stirrups Spacing	2-D13 @150	2-D13 @200	2-D13 @150
Check Ratio	0.3464	0.3799	0.2787

Company		Project Title
Author		File Name
MIDAS		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	3m
Section Property	2G7 (No : 309)		



TOP 6-D22
BOT 4-D22
STIRRUPS 2-D13 @150

TOP 4-D22
BOT 8-D22
STIRRUPS 2-D13 @200

TOP 6-D22
BOT 8-D22
STIRRUPS 2-D13 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	25	6	25
Moment (Mu)	61.17	47.99	168.91
Factored Strength (φMn)	615.54	419.19	615.54
Check Ratio (Mu/φMn)	0.0994	0.1145	0.2744
(+) Load Combination No.	25	25	25
Moment (Mu)	233.84	180.28	233.88
Factored Strength (φMn)	417.91	798.90	417.91
Check Ratio (Mu/φMn)	0.5596	0.2257	0.5596
Using Rebar Top (As_top)	0.0023	0.0015	0.0023
Using Rebar Bot (As_bot)	0.0015	0.0031	0.0015

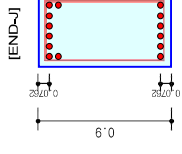
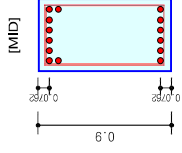
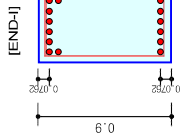
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	25	25	25
Factored Shear Force (Vu)	145.33	168.45	184.50
Shear Strength by Conc.(φVc)	252.24	252.24	252.24
Shear Strength by Rebar.(φVs)	417.50	313.13	417.50
Using Shear Reinf. (AsV)	0.0017	0.0013	0.0017
Using Stirrups Spacing	2-D13 @150	2-D13 @200	2-D13 @150
Check Ratio	0.2170	0.2979	0.2755

Company		Project Title
Author		File Name
MIDAS		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4m
Section Property	2G6 (No : 308)		



TOP 8-D22
BOT 6-D22
STIRRUPS 2-D13 @250

TOP 8-D22
BOT 6-D22
STIRRUPS 2-D13 @250

TOP 8-D22
BOT 6-D22
STIRRUPS 2-D13 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	24	25	26
Moment (Mu)	161.91	117.05	149.14
Factored Strength (φMn)	799.61	799.61	799.61
Check Ratio (Mu/φMn)	0.2025	0.1464	0.1865
(+) Load Combination No.	39	38	39
Moment (Mu)	0.00	0.00	0.00
Factored Strength (φMn)	614.18	614.18	614.18
Check Ratio (Mu/φMn)	0.0000	0.0000	0.0000
Using Rebar Top (As_top)	0.0031	0.0031	0.0031
Using Rebar Bot (As_bot)	0.0023	0.0023	0.0023

3. Shear Capacity

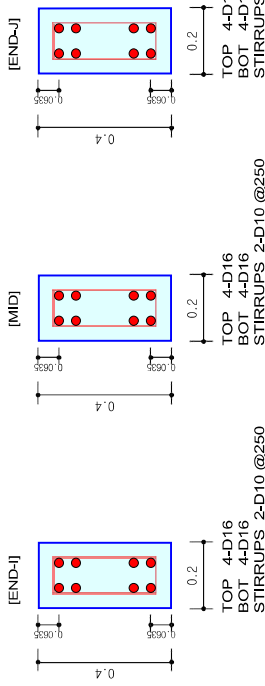
	END-I	MID	END-J
Load Combination No.	24	24	26
Factored Shear Force (Vu)	63.25	41.35	57.87
Shear Strength by Conc.(φVc)	248.62	248.62	248.62
Shear Strength by Rebar.(φVs)	246.91	246.91	246.91
Using Shear Reinf. (AsV)	0.0010	0.0010	0.0010
Using Stirrups Spacing	2-D13 @250	2-D13 @250	2-D13 @250
Check Ratio	0.1276	0.0834	0.1168

Certified by :

Company		Project Title
Author		File Name
MIDAS		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 3G1 (No : 381) Beam Span 4m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	6
Moment (Mu)	42.46	6.85	42.36
Factored Strength (φMn)	74.68	74.68	74.68
Check Ratio (Mu/φMn)	0.5686	0.0917	0.5672
(+) Load Combination No.	6	6	6
Moment (Mu)	25.40	33.03	16.22
Factored Strength (φMn)	74.68	74.68	74.68
Check Ratio (Mu/φMn)	0.3401	0.4423	0.2173
Using Rebar Top (As_top)	0.0008	0.0008	0.0008
Using Rebar Bot (As_bot)	0.0008	0.0008	0.0008

3. Shear Capacity

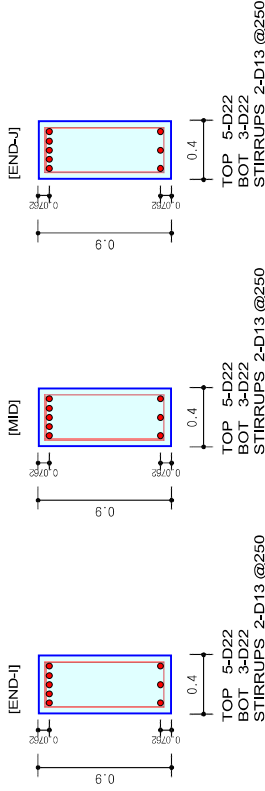
	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	44.06	32.75	42.69
Shear Strength by Conc.(φVc)	38.71	38.71	38.71
Shear Strength by Rebar.(φVs)	54.11	54.11	54.11
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.4747	0.3529	0.4600

Certified by :

Company		Project Title
Author		File Name
MIDAS		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 2G8A (No : 311) Beam Span 3.8m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	26	24	24
Moment (Mu)	105.87	82.67	199.26
Factored Strength (φMn)	512.10	512.10	512.10
Check Ratio (Mu/φMn)	0.2067	0.1614	0.3891
(+) Load Combination No.	24	24	26
Moment (Mu)	186.68	111.24	64.94
Factored Strength (φMn)	314.39	314.39	314.39
Check Ratio (Mu/φMn)	0.5938	0.3538	0.2066
Using Rebar Top (As_top)	0.0019	0.0019	0.0019
Using Rebar Bot (As_bot)	0.0012	0.0012	0.0012

3. Shear Capacity

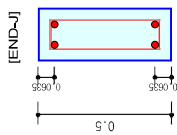
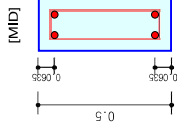
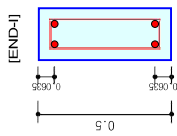
	END-I	MID	END-J
Load Combination No.	24	24	24
Factored Shear Force (Vu)	105.78	143.55	156.35
Shear Strength by Conc.(φVc)	201.79	201.79	201.79
Shear Strength by Rebar.(φVs)	250.50	250.50	250.50
Using Shear Reinf. (AsV)	0.0010	0.0010	0.0010
Using Stirrups Spacing	2-D13 @250	2-D13 @250	2-D13 @250
Check Ratio	0.2339	0.3174	0.3457

Certified by :

	Company	Project Title
	Author	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa		
Section Property	RG2 (No : 452)	Beam Span	3.35m



TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	26	24	24
Moment (Mu)	10.27	14.01	42.17
Factored Strength (φMn)	56.83	56.83	56.83
Check Ratio (Mu/φMn)	0.1808	0.2466	0.7420
(+) Load Combination No.	24	24	26
Moment (Mu)	15.70	15.70	4.37
Factored Strength (φMn)	56.83	56.83	56.83
Check Ratio (Mu/φMn)	0.2763	0.2763	0.0769
Using Rebar Top (As_top)	0.0004	0.0004	0.0004
Using Rebar Bot (As_bot)	0.0004	0.0004	0.0004

3. Shear Capacity

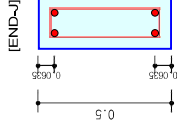
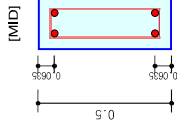
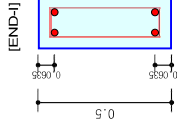
	END-I	MID	END-J
Load Combination No.	26	24	24
Factored Shear Force (Vu)	20.05	30.70	36.42
Shear Strength by Conc.(φVc)	53.46	53.46	53.46
Shear Strength by Rebar.(φVs)	74.73	74.73	74.73
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.1565	0.2395	0.2841

Certified by :

	Company	Project Title
	Author	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa		
Section Property	3G2 (No : 382)	Beam Span	3.35m



TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	26	24	24
Moment (Mu)	15.18	14.48	42.17
Factored Strength (φMn)	56.83	56.83	56.83
Check Ratio (Mu/φMn)	0.2671	0.2548	0.7420
(+) Load Combination No.	36	24	26
Moment (Mu)	16.44	16.39	5.43
Factored Strength (φMn)	56.83	56.83	56.83
Check Ratio (Mu/φMn)	0.2893	0.2884	0.0956
Using Rebar Top (As_top)	0.0004	0.0004	0.0004
Using Rebar Bot (As_bot)	0.0004	0.0004	0.0004

3. Shear Capacity

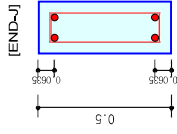
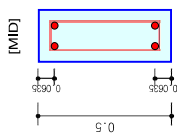
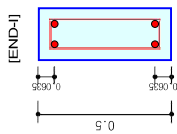
	END-I	MID	END-J
Load Combination No.	26	24	24
Factored Shear Force (Vu)	23.12	30.36	35.74
Shear Strength by Conc.(φVc)	53.46	53.46	53.46
Shear Strength by Rebar.(φVs)	74.73	74.73	74.73
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.1804	0.2369	0.2788

Certified by :

	Company	Project Title
	Author	
		김진오(토음) 설계예시정중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 4G2 (No : 392) Beam Span 3.35m



TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

TOP 2-D16
BOT 2-D16
STIRRUPS 2-D10 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	26	24	24
Moment (Mu)	11.28	14.73	43.89
Factored Strength (ϕM_n)	56.83	56.83	56.83
Check Ratio ($M_u/\phi M_n$)	0.1985	0.2592	0.7723
(+) Load Combination No.	24	24	26
Moment (Mu)	17.00	17.00	5.26
Factored Strength (ϕM_n)	56.83	56.83	56.83
Check Ratio ($M_u/\phi M_n$)	0.2992	0.2992	0.0926
Using Rebar Top (As_top)	0.0004	0.0004	0.0004
Using Rebar Bot (As_bot)	0.0004	0.0004	0.0004

3. Shear Capacity

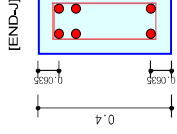
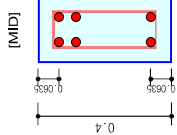
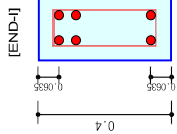
	END-I	MID	END-J
Load Combination No.	26	24	24
Factored Shear Force (Vu)	19.76	31.92	37.64
Shear Strength by Conc. (ϕV_c)	53.46	53.46	53.46
Shear Strength by Rebar. (ϕV_s)	74.73	74.73	74.73
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.1541	0.2490	0.2937

Certified by :

	Company	Project Title
	Author	
		김진오(토음) 설계예시정중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 4G1 (No : 391) Beam Span 4m



TOP 4-D16
BOT 2-D16
STIRRUPS 2-D10 @250

TOP 4-D16
BOT 2-D16
STIRRUPS 2-D10 @250

TOP 4-D16
BOT 2-D16
STIRRUPS 2-D10 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	6
Moment (Mu)	43.81	6.84	43.66
Factored Strength (ϕM_n)	75.20	75.20	75.20
Check Ratio ($M_u/\phi M_n$)	0.5826	0.0910	0.5806
(+) Load Combination No.	6	6	6
Moment (Mu)	26.63	34.40	16.15
Factored Strength (ϕM_n)	45.19	45.19	45.19
Check Ratio ($M_u/\phi M_n$)	0.5894	0.7611	0.3575
Using Rebar Top (As_top)	0.0008	0.0008	0.0008
Using Rebar Bot (As_bot)	0.0004	0.0004	0.0004

3. Shear Capacity

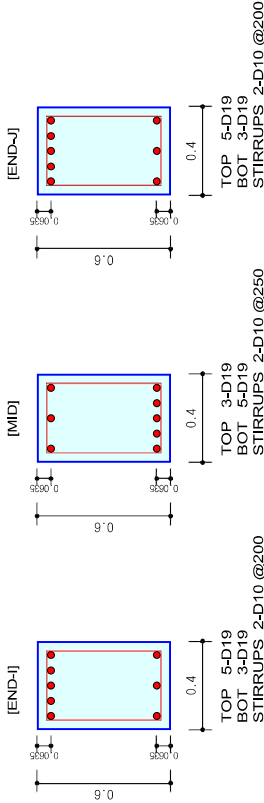
	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	46.07	34.05	44.87
Shear Strength by Conc. (ϕV_c)	38.71	38.71	38.71
Shear Strength by Rebar. (ϕV_s)	54.11	54.11	54.11
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.4964	0.3668	0.4835

Certified by :

Company		Project Title
Author		File Name
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property RG8 (No : 410) Beam Span 2.875m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	24	24	24
Moment (Mu)	78.39	119.08	140.45
Factored Strength (ϕM_n)	244.34	151.40	244.34
Check Ratio ($M_u/\phi M_n$)	0.3208	0.7865	0.5748
(+) Load Combination No.	24	6	24
Moment (Mu)	79.17	68.60	84.98
Factored Strength (ϕM_n)	151.40	244.34	151.40
Check Ratio ($M_u/\phi M_n$)	0.5229	0.2808	0.5613
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

3. Shear Capacity

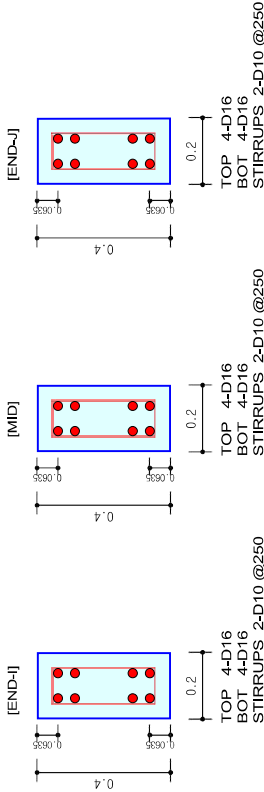
	END-I	MID	END-J
Load Combination No.	26	26	24
Factored Shear Force (Vu)	110.85	106.34	108.23
Shear Strength by Conc.(ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar.(ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.4502	0.4763	0.4396

Certified by :

Company		Project Title
Author		File Name
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.10.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property RG1 (No : 451) Beam Span 4m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	6
Moment (Mu)	43.67	6.89	43.52
Factored Strength (ϕM_n)	74.68	74.68	74.68
Check Ratio ($M_u/\phi M_n$)	0.5848	0.0896	0.5827
(+) Load Combination No.	6	6	6
Moment (Mu)	26.62	34.36	16.09
Factored Strength (ϕM_n)	74.68	74.68	74.68
Check Ratio ($M_u/\phi M_n$)	0.3564	0.4601	0.2155
Using Rebar Top (As_top)	0.0008	0.0008	0.0008
Using Rebar Bot (As_bot)	0.0008	0.0008	0.0008

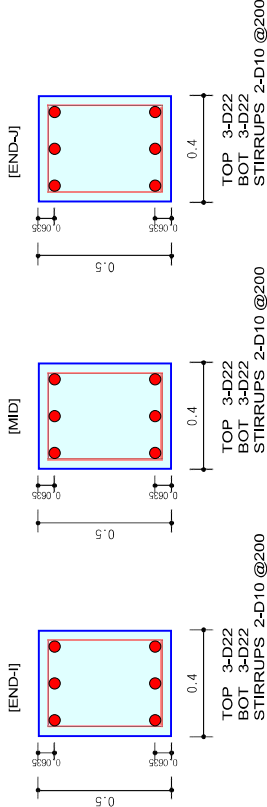
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	46.00	33.98	44.85
Shear Strength by Conc.(ϕV_c)	38.71	38.71	38.71
Shear Strength by Rebar.(ϕV_s)	54.11	54.11	54.11
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.4956	0.3661	0.4832

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1B3 (No : 215) Beam Span 7.10019m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	114	81
Moment (Mu)	116.65	0.00	104.62
Factored Strength (ϕM_n)	160.95	160.95	160.95
Check Ratio ($M_u/\phi M_n$)	0.7248	0.0000	0.6500
(+) Load Combination No.	81	81	81
Moment (Mu)	46.08	105.82	52.10
Factored Strength (ϕM_n)	160.95	160.95	160.95
Check Ratio ($M_u/\phi M_n$)	0.2863	0.6574	0.3237
Using Rebar Top (As_top)	0.0012	0.0012	0.0012
Using Rebar Bot (As_bot)	0.0012	0.0012	0.0012

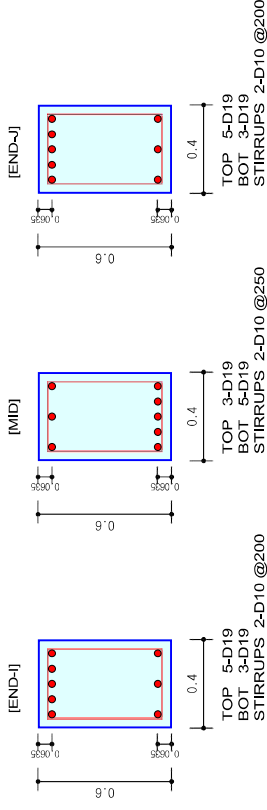
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	107.71	65.61	104.32
Shear Strength by Conc. (ϕV_c)	106.92	106.92	106.92
Shear Strength by Rebar. (ϕV_s)	93.41	93.41	93.41
Using Shear Reinf. (AsV)	0.0007	0.0007	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @200	2-D10 @200
Check Ratio	0.5377	0.3275	0.5207

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1B1 (No : 184) Beam Span 3.25019m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	81	99
Moment (Mu)	137.75	70.18	102.20
Factored Strength (ϕM_n)	244.34	151.40	244.34
Check Ratio ($M_u/\phi M_n$)	0.5638	0.4635	0.4183
(+) Load Combination No.	99	81	100
Moment (Mu)	21.66	10.27	24.17
Factored Strength (ϕM_n)	151.40	244.34	151.40
Check Ratio ($M_u/\phi M_n$)	0.1430	0.0420	0.1596
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

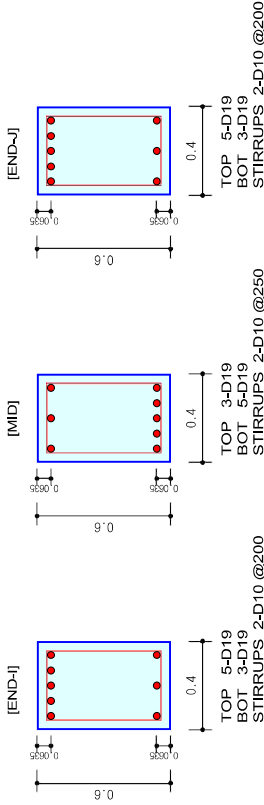
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	99
Factored Shear Force (Vu)	88.24	75.76	71.70
Shear Strength by Conc. (ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar. (ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.3584	0.3393	0.2912

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1G2 (No : 162) Beam Span 5.09981m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	100	112	102
Moment (Mu)	49.29	6.76	81.98
Factored Strength (ϕM_n)	244.34	151.40	244.34
Check Ratio ($M_u/\phi M_n$)	0.2017	0.0447	0.3355
(+) Load Combination No.	81	81	100
Moment (Mu)	56.87	59.97	18.84
Factored Strength (ϕM_n)	151.40	244.34	151.40
Check Ratio ($M_u/\phi M_n$)	0.3756	0.2454	0.1245
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

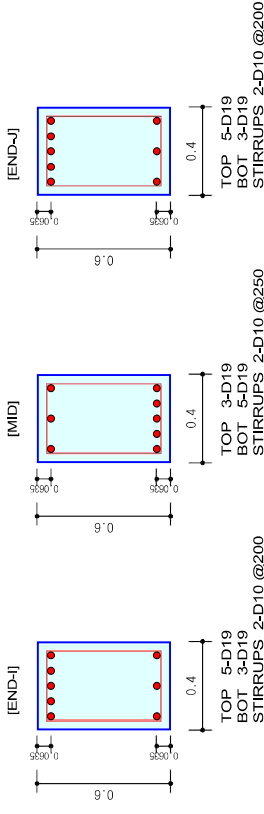
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	81
Factored Shear Force (Vu)	54.18	63.53	91.36
Shear Strength by Conc.(ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar.(ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.2200	0.2846	0.3711

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 1G1 (No : 161) Beam Span 3.25019m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	81	99
Moment (Mu)	130.70	63.42	95.67
Factored Strength (ϕM_n)	244.34	151.40	244.34
Check Ratio ($M_u/\phi M_n$)	0.5349	0.4189	0.3916
(+) Load Combination No.	111	100	100
Moment (Mu)	11.59	29.60	53.41
Factored Strength (ϕM_n)	151.40	244.34	151.40
Check Ratio ($M_u/\phi M_n$)	0.0766	0.1211	0.3528
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

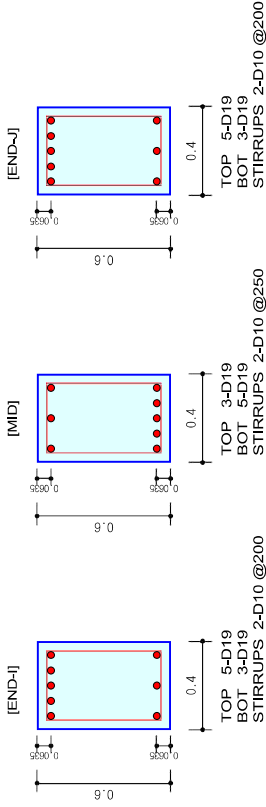
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	99
Factored Shear Force (Vu)	94.22	83.20	65.04
Shear Strength by Conc.(ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar.(ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.3827	0.3726	0.2642

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	fck = 24000, fy = 400000, fys = 400000 KPa		
Section Property	1G3 (No : 163)	Beam Span	0.8m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	101	101	101
Moment (Mu)	15.91	11.71	3.53
Factored Strength (φMn)	244.34	151.40	244.34
Check Ratio (Mu/φMn)	0.0651	0.0773	0.0144
(+) Load Combination No.	111	111	101
Moment (Mu)	1.86	1.33	0.44
Factored Strength (φMn)	151.40	244.34	151.40
Check Ratio (Mu/φMn)	0.0123	0.0055	0.0029
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

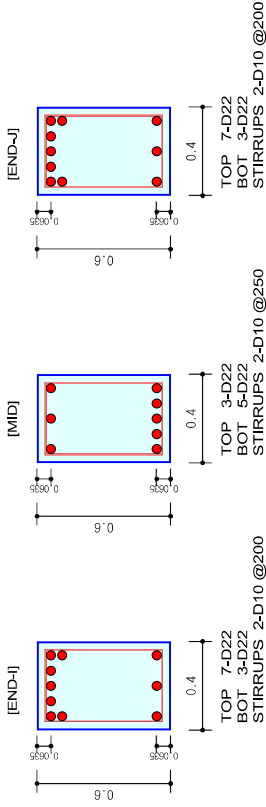
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	101	101	101
Factored Shear Force (Vu)	56.64	55.58	53.45
Shear Strength by Conc.(φVc)	131.42	131.42	131.42
Shear Strength by Rebar.(φVs)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.2301	0.2489	0.2171

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	fck = 24000, fy = 400000, fys = 400000 KPa		
Section Property	1G3 (No : 163)	Beam Span	3.25019m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	81	81	102
Moment (Mu)	147.86	68.94	29.18
Factored Strength (φMn)	434.29	200.40	434.29
Check Ratio (Mu/φMn)	0.3405	0.3440	0.0672
(+) Load Combination No.	102	100	100
Moment (Mu)	21.81	38.20	69.38
Factored Strength (φMn)	201.22	325.05	201.22
Check Ratio (Mu/φMn)	0.1084	0.1175	0.3448
Using Rebar Top (As_top)	0.0027	0.0012	0.0027
Using Rebar Bot (As_bot)	0.0012	0.0019	0.0012

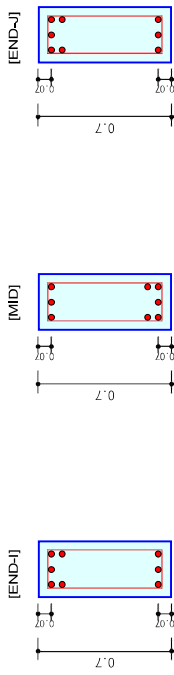
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	81	81	102
Factored Shear Force (Vu)	114.45	95.01	50.88
Shear Strength by Conc.(φVc)	128.11	131.42	128.11
Shear Strength by Rebar.(φVs)	111.92	91.84	111.92
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.4768	0.4255	0.2120

Company		Project Title
Author		File Name
		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	3m
Section Property	2B3 (No : 279)		



TOP 5-D19
BOT 3-D19
STIRRUPS 2-D10 @250

TOP 3-D19
BOT 5-D19
STIRRUPS 2-D10 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	39	6
Moment (Mu)	16.92	0.00	25.97
Factored Strength (φMn)	276.86	177.25	276.86
Check Ratio (Mu/φMn)	0.0611	0.0000	0.0938
(+) Load Combination No.	6	6	6
Moment (Mu)	52.61	54.57	54.57
Factored Strength (φMn)	177.25	276.86	177.25
Check Ratio (Mu/φMn)	0.2968	0.1971	0.3079
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

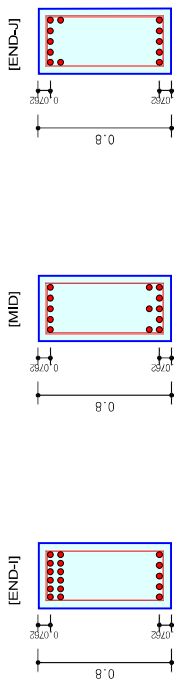
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	54.41	47.17	57.56
Shear Strength by Conc.(φVc)	112.50	112.50	112.50
Shear Strength by Rebar.(φVs)	104.83	104.83	104.83
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.2504	0.2171	0.2649

Company		Project Title
Author		File Name
		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4.5m
Section Property	2B1 (No : 319)		



TOP 12-D22
BOT 5-D22
STIRRUPS 2-D13 @125

TOP 5-D22
BOT 8-D22
STIRRUPS 2-D13 @150

TOP 7-D22
BOT 5-D22
STIRRUPS 2-D13 @150

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	6
Moment (Mu)	29.14	72.32	218.07
Factored Strength (φMn)	990.27	444.59	603.82
Check Ratio (Mu/φMn)	0.0294	0.1627	0.3612
(+) Load Combination No.	6	6	6
Moment (Mu)	172.78	182.43	182.43
Factored Strength (φMn)	444.39	681.76	444.84
Check Ratio (Mu/φMn)	0.3888	0.2676	0.4101
Using Rebar Top (As_top)	0.0046	0.0019	0.0027
Using Rebar Bot (As_bot)	0.0019	0.0031	0.0019

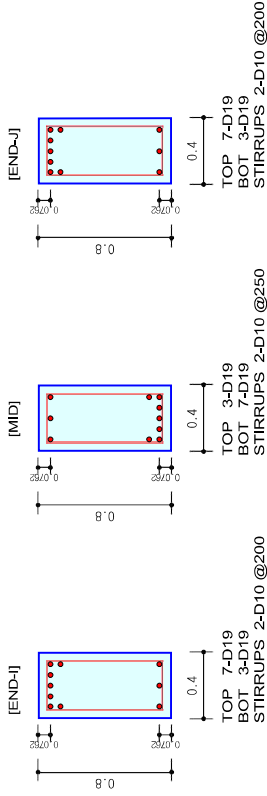
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	106.46	124.36	147.90
Shear Strength by Conc.(φVc)	171.51	177.29	173.99
Shear Strength by Rebar.(φVs)	425.83	366.82	359.99
Using Shear Reinf. (AsV)	0.0020	0.0017	0.0017
Using Stirrups Spacing	2-D13 @125	2-D13 @150	2-D13 @150
Check Ratio	0.1782	0.2286	0.2770

Company		Project Title	
Author		File Name	
		김진오(토목) 설계예시정중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4.5m
Section Property	2G2 (No : 243)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	26
Moment (Mu)	175.06	108.37	88.96
Factored Strength (φMn)	452.98	210.60	452.98
Check Ratio (Mu/φMn)	0.3865	0.5146	0.1964
(+) Load Combination No.	6	6	6
Moment (Mu)	130.21	122.65	129.12
Factored Strength (φMn)	210.60	452.98	210.60
Check Ratio (Mu/φMn)	0.6183	0.2708	0.6131
Using Rebar Top (As_top)	0.0020	0.0009	0.0020
Using Rebar Bot (As_bot)	0.0009	0.0020	0.0009

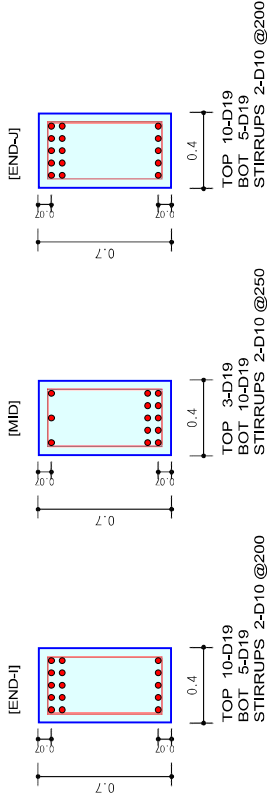
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	143.13	135.66	120.72
Shear Strength by Conc.(φVc)	174.21	177.29	177.29
Shear Strength by Rebar.(φVs)	152.19	123.91	154.89
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.4385	0.4504	0.3634

Company		Project Title	
Author		File Name	
		김진오(토목) 설계예시정중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	1.5m
Section Property	2G1 (No : 241)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	38	24	24
Moment (Mu)	16.46	71.33	106.86
Factored Strength (φMn)	538.69	184.34	538.69
Check Ratio (Mu/φMn)	0.0306	0.3869	0.1984
(+) Load Combination No.	24	38	38
Moment (Mu)	20.15	46.00	63.80
Factored Strength (φMn)	290.33	535.77	290.33
Check Ratio (Mu/φMn)	0.0694	0.0859	0.2197
Using Rebar Top (As_top)	0.0029	0.0009	0.0029
Using Rebar Bot (As_bot)	0.0014	0.0029	0.0014

3. Shear Capacity

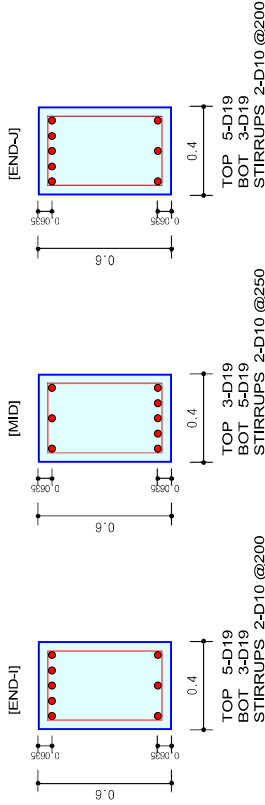
	END-I	MID	END-J
Load Combination No.	24	24	24
Factored Shear Force (Vu)	80.51	94.30	101.77
Shear Strength by Conc.(φVc)	148.92	154.32	148.92
Shear Strength by Rebar.(φVs)	130.10	107.85	130.10
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.2886	0.3597	0.3648

Certified by :

Company		Project Title
Author		File Name
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 2G3 (No : 250) Beam Span 2.875m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	26	24	24
Moment (Mu)	93.73	94.76	113.72
Factored Strength (ϕM_n)	244.34	151.40	244.34
Check Ratio ($M_u/\phi M_n$)	0.3836	0.6259	0.4654
(+) Load Combination No.	24	24	24
Moment (Mu)	61.50	58.31	66.42
Factored Strength (ϕM_n)	151.40	244.34	151.40
Check Ratio ($M_u/\phi M_n$)	0.4062	0.2386	0.4387
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

3. Shear Capacity

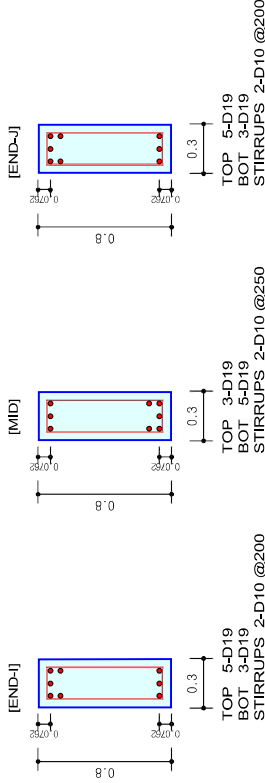
	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	119.66	114.66	101.32
Shear Strength by Conc.(ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar.(ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.4860	0.5136	0.4115

Certified by :

Company		Project Title
Author		File Name
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 KPa
Section Property 2G3 (No : 245) Beam Span 2.45m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	24	24
Moment (Mu)	13.88	2.83	13.76
Factored Strength (ϕM_n)	321.93	205.42	321.93
Check Ratio ($M_u/\phi M_n$)	0.0431	0.0138	0.0427
(+) Load Combination No.	24	6	27
Moment (Mu)	2.48	5.56	2.34
Factored Strength (ϕM_n)	205.42	321.93	205.42
Check Ratio ($M_u/\phi M_n$)	0.0121	0.0173	0.0114
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

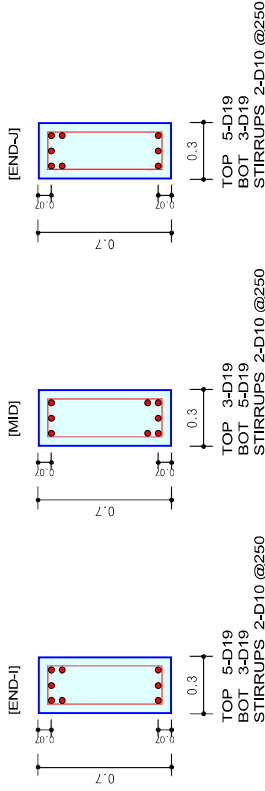
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	27.80	17.58	28.43
Shear Strength by Conc.(ϕV_c)	129.73	129.73	129.73
Shear Strength by Rebar.(ϕV_s)	151.11	120.89	151.11
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.0990	0.0701	0.1012

Company		Project Title	
Author		File Name	
		김진오(토목) 설계예시정중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	3m
Section Property	3B3 (No : 363)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	39	6
Moment (Mu)	22.14	0.00	15.07
Factored Strength (φMn)	276.86	177.25	276.86
Check Ratio (Mu/φMn)	0.0800	0.0000	0.0544
(+) Load Combination No.	6	6	6
Moment (Mu)	62.46	62.46	61.53
Factored Strength (φMn)	177.25	276.86	177.25
Check Ratio (Mu/φMn)	0.3524	0.2256	0.3471
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

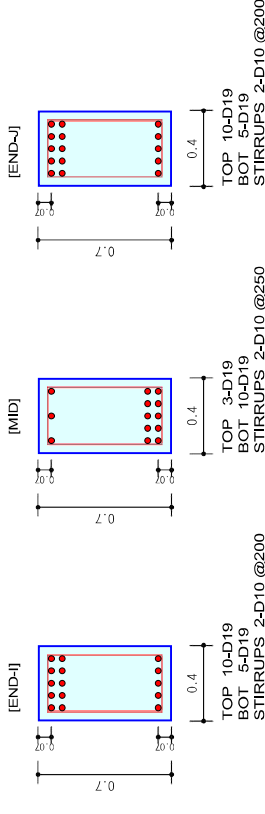
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	59.75	49.36	57.10
Shear Strength by Conc.(φVc)	112.50	112.50	112.50
Shear Strength by Rebar.(φVs)	104.83	104.83	104.83
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.2749	0.2271	0.2627

Company		Project Title	
Author		File Name	
		김진오(토목) 설계예시정중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4.5m
Section Property	3B1 (No : 361)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	34	6
Moment (Mu)	66.22	0.00	45.52
Factored Strength (φMn)	538.69	184.34	538.69
Check Ratio (Mu/φMn)	0.1229	0.0000	0.0845
(+) Load Combination No.	6	6	6
Moment (Mu)	183.27	183.27	182.70
Factored Strength (φMn)	290.33	535.77	290.33
Check Ratio (Mu/φMn)	0.6313	0.3421	0.6293
Using Rebar Top (As_top)	0.0029	0.0009	0.0029
Using Rebar Bot (As_bot)	0.0014	0.0029	0.0014

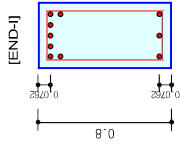
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	111.12	88.85	110.86
Shear Strength by Conc.(φVc)	148.92	148.92	148.92
Shear Strength by Rebar.(φVs)	130.10	104.08	130.10
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.3982	0.3512	0.3973

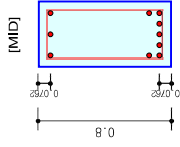
Company		Project Title	
Author		File Name	
		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.09.mgb	

1. Design Information

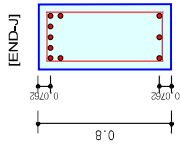
Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4.5m
Section Property	3G2 (No : 333)		



TOP 7-D19
BOT 3-D19
STIRRUPS 2-D10 @250



TOP 3-D19
BOT 7-D19
STIRRUPS 2-D10 @250



TOP 7-D19
BOT 3-D19
STIRRUPS 2-D10 @250

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	38	6
Moment (Mu)	31.85	0.33	31.34
Factored Strength (φMn)	452.98	210.60	452.98
Check Ratio (Mu/φMn)	0.0703	0.0016	0.0692
(+) Load Combination No.	27	6	27
Moment (Mu)	5.18	17.16	5.30
Factored Strength (φMn)	210.60	452.98	210.60
Check Ratio (Mu/φMn)	0.0246	0.0379	0.0251
Using Rebar Top (As_top)	0.0020	0.0009	0.0020
Using Rebar Bot (As_bot)	0.0009	0.0020	0.0009

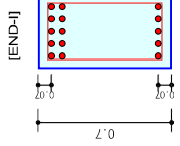
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	41.36	24.18	41.01
Shear Strength by Conc.(φVc)	174.21	174.21	174.21
Shear Strength by Rebar.(φVs)	152.19	121.75	152.19
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.1267	0.0817	0.1256

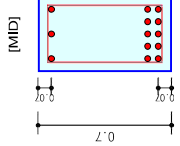
Company		Project Title	
Author		File Name	
		김진오(토음) 장래예시장중속관련 구조안전성검토_ver.09.mgb	

1. Design Information

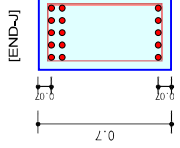
Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4.5m
Section Property	3G1 (No : 331)		



TOP 10-D19
BOT 5-D19
STIRRUPS 2-D10 @200



TOP 3-D19
BOT 10-D19
STIRRUPS 2-D10 @250



TOP 10-D19
BOT 5-D19
STIRRUPS 2-D10 @200

2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	26	6
Moment (Mu)	220.06	53.22	227.96
Factored Strength (φMn)	538.69	184.34	538.69
Check Ratio (Mu/φMn)	0.4085	0.2887	0.4232
(+) Load Combination No.	6	6	6
Moment (Mu)	258.49	191.24	258.00
Factored Strength (φMn)	290.33	535.77	290.33
Check Ratio (Mu/φMn)	0.8903	0.3569	0.8886
Using Rebar Top (As_top)	0.0029	0.0009	0.0029
Using Rebar Bot (As_bot)	0.0014	0.0029	0.0014

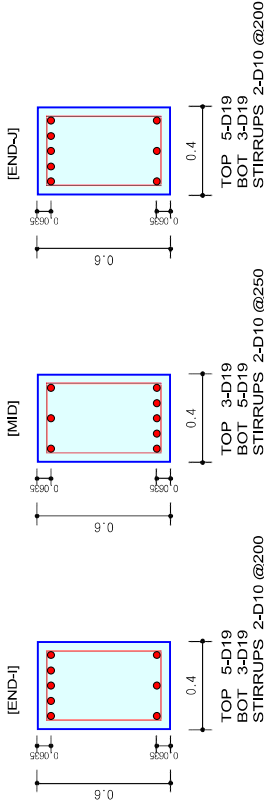
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	172.11	148.83	174.06
Shear Strength by Conc.(φVc)	148.92	154.32	148.92
Shear Strength by Rebar.(φVs)	130.10	107.85	130.10
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.6168	0.5677	0.6238

Company		Project Title
Author		File Name
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	$f_{ck} = 24000$, $f_y = 400000$, $f_{ys} = 400000$ KPa	Beam Span	2.875m
Section Property	3G3 (No : 340)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	24	24	24
Moment (Mu)	72.56	112.02	132.77
Factored Strength (ϕM_n)	244.34	151.40	244.34
Check Ratio ($M_u/\phi M_n$)	0.2970	0.7399	0.5434
(+) Load Combination No.	24	6	24
Moment (Mu)	75.51	68.02	80.91
Factored Strength (ϕM_n)	151.40	244.34	151.40
Check Ratio ($M_u/\phi M_n$)	0.4988	0.2784	0.5344
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

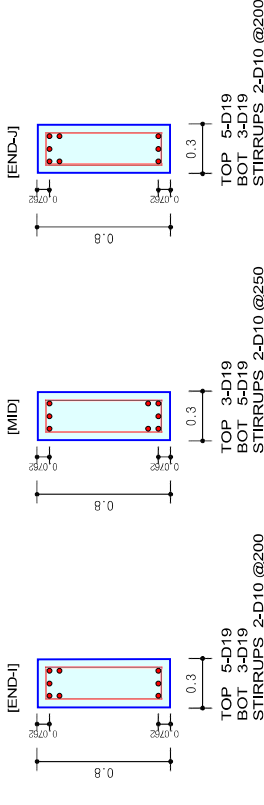
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	26	26	6
Factored Shear Force (Vu)	109.90	105.39	106.58
Shear Strength by Conc. (ϕV_c)	131.42	131.42	131.42
Shear Strength by Rebar. (ϕV_s)	114.81	91.84	114.81
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-010 @200	2-010 @250	2-010 @200
Check Ratio	0.4463	0.4721	0.4329

Company		Project Title
Author		File Name
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	$f_{ck} = 24000$, $f_y = 400000$, $f_{ys} = 400000$ KPa	Beam Span	2.45m
Section Property	3G3 (No : 335)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	27	27
Moment (Mu)	8.95	2.49	9.29
Factored Strength (ϕM_n)	321.93	205.42	321.93
Check Ratio ($M_u/\phi M_n$)	0.0278	0.0121	0.0288
(+) Load Combination No.	24	24	27
Moment (Mu)	2.48	4.36	2.78
Factored Strength (ϕM_n)	205.42	321.93	205.42
Check Ratio ($M_u/\phi M_n$)	0.0121	0.0135	0.0135
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

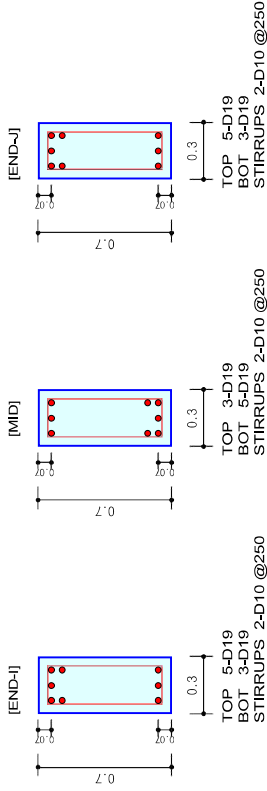
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	24	6
Factored Shear Force (Vu)	16.64	10.29	16.12
Shear Strength by Conc. (ϕV_c)	129.73	132.97	129.73
Shear Strength by Rebar. (ϕV_s)	151.11	123.91	151.11
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-010 @200	2-010 @250	2-010 @200
Check Ratio	0.0593	0.0401	0.0574

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	3m
Section Property	RB3 (No : 433)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	39	6
Moment (Mu)	22.96	0.00	22.77
Factored Strength (φMn)	276.86	177.25	276.86
Check Ratio (Mu/φMn)	0.0829	0.0000	0.0823
(+) Load Combination No.	6	6	6
Moment (Mu)	64.47	63.40	64.21
Factored Strength (φMn)	177.25	276.86	177.25
Check Ratio (Mu/φMn)	0.3638	0.2290	0.3622
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

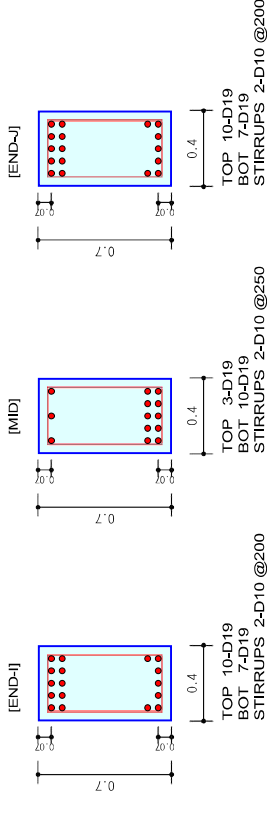
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	60.92	50.55	60.94
Shear Strength by Conc.(φVc)	112.50	112.50	112.50
Shear Strength by Rebar.(φVs)	104.83	104.83	104.83
Using Shear Reinf. (AsV)	0.0006	0.0006	0.0006
Using Stirrups Spacing	2-D10 @250	2-D10 @250	2-D10 @250
Check Ratio	0.2803	0.2326	0.2804

Company		Project Title	
Author		File Name	
		김진오(토음) 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	f _{ck} = 24000, f _y = 400000, f _{ys} = 400000 KPa	Beam Span	4.5m
Section Property	RB1 (No : 431)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	39	6
Moment (Mu)	47.27	0.00	48.49
Factored Strength (φMn)	534.80	184.34	534.80
Check Ratio (Mu/φMn)	0.0884	0.0000	0.0907
(+) Load Combination No.	6	6	6
Moment (Mu)	175.44	175.85	175.85
Factored Strength (φMn)	387.25	535.77	387.25
Check Ratio (Mu/φMn)	0.4530	0.3282	0.4541
Using Rebar Top (As_top)	0.0029	0.0009	0.0029
Using Rebar Bot (As_bot)	0.0020	0.0029	0.0020

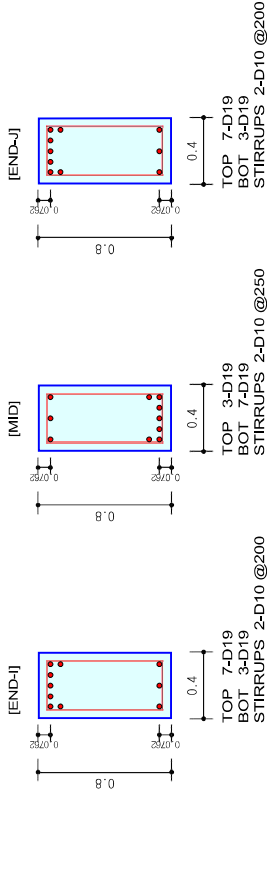
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	109.18	87.16	109.42
Shear Strength by Conc.(φVc)	148.92	148.92	148.92
Shear Strength by Rebar.(φVs)	130.10	104.08	130.10
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.3913	0.3445	0.3922

Company		Project Title
Author		File Name
MIDAS		김진오(토목) 설계예시정중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	fck = 24000, fy = 400000, fys = 400000 KPa	Beam Span	4.5m
Section Property	RG2 (No : 403)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	6
Moment (Mu)	149.02	80.60	30.11
Factored Strength (φMn)	452.98	210.60	452.98
Check Ratio (Mu/φMn)	0.3290	0.3827	0.0665
(+) Load Combination No.	6	6	6
Moment (Mu)	72.11	69.88	71.12
Factored Strength (φMn)	210.60	452.98	210.60
Check Ratio (Mu/φMn)	0.3424	0.1543	0.3377
Using Rebar Top (As_top)	0.0020	0.0009	0.0020
Using Rebar Bot (As_bot)	0.0009	0.0020	0.0009

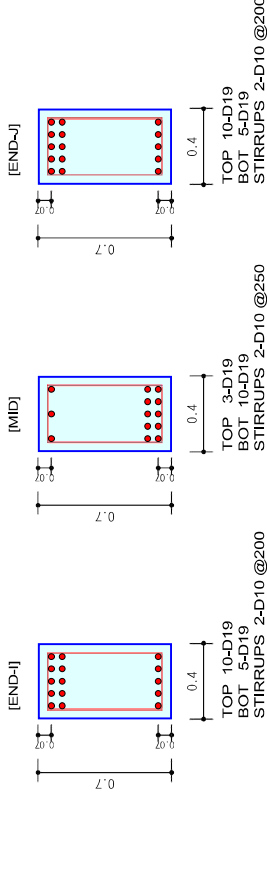
3. Shear Capacity

	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	126.43	115.85	80.44
Shear Strength by Conc.(φVc)	174.21	177.29	177.29
Shear Strength by Rebar.(φVs)	152.19	123.91	154.89
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.3873	0.3846	0.2422

Company		Project Title
Author		File Name
MIDAS		김진오(토목) 설계예시정중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code	KDS 41 20 : 2022	Unit System	kN, m
Material Data	fck = 24000, fy = 400000, fys = 400000 KPa	Beam Span	4.5m
Section Property	RG1 (No : 401)		



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	6	6	6
Moment (Mu)	239.63	61.60	235.77
Factored Strength (φMn)	538.69	184.34	538.69
Check Ratio (Mu/φMn)	0.4448	0.3342	0.4377
(+) Load Combination No.	6	6	6
Moment (Mu)	256.25	185.99	256.16
Factored Strength (φMn)	290.33	535.77	290.33
Check Ratio (Mu/φMn)	0.8826	0.3471	0.8823
Using Rebar Top (As_top)	0.0029	0.0009	0.0029
Using Rebar Bot (As_bot)	0.0014	0.0029	0.0014

3. Shear Capacity

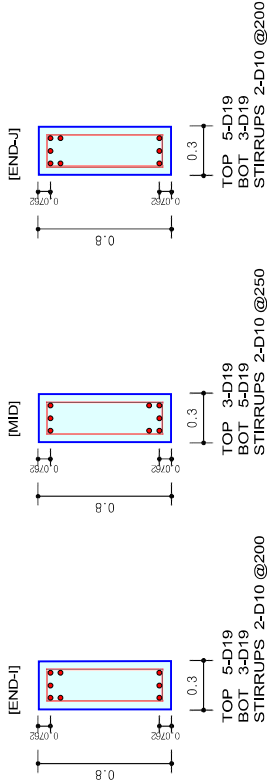
	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	176.23	151.00	175.35
Shear Strength by Conc.(φVc)	148.92	154.32	148.92
Shear Strength by Rebar.(φVs)	130.10	107.85	130.10
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.6316	0.5760	0.6285

Certified by :

Company		Project Title
Author		File Name
MIDAS		김진외도열 장래예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Information

Design Code KDS 41 20 : 2022 Unit System kN, m
Material Data fck = 24000, fy = 400000, fys = 400000 kPa
Section Property RG3 (No : 405) Beam Span 2.45m



2. Bending Moment Capacity

	END-I	MID	END-J
(-) Load Combination No.	24	36	6
Moment (Mu)	7.96	1.07	7.34
Factored Strength (ϕM_n)	321.93	205.42	321.93
Check Ratio ($M_u/\phi M_n$)	0.0247	0.0052	0.0228
(+) Load Combination No.	24	24	27
Moment (Mu)	3.23	4.70	2.79
Factored Strength (ϕM_n)	205.42	321.93	205.42
Check Ratio ($M_u/\phi M_n$)	0.0157	0.0146	0.0136
Using Rebar Top (As_top)	0.0014	0.0009	0.0014
Using Rebar Bot (As_bot)	0.0009	0.0014	0.0009

3. Shear Capacity

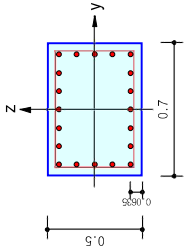
	END-I	MID	END-J
Load Combination No.	6	6	6
Factored Shear Force (Vu)	16.39	10.30	16.40
Shear Strength by Conc.(ϕV_c)	129.73	129.73	129.73
Shear Strength by Rebar.(ϕV_s)	151.11	120.89	151.11
Using Shear Reinf. (AsV)	0.0007	0.0006	0.0007
Using Stirrups Spacing	2-D10 @200	2-D10 @250	2-D10 @200
Check Ratio	0.0584	0.0411	0.0584

Certified by :

Company	Project Title
	File Name
Author	김진익토원 설계에식정중속관련 구조안전성검토_ver.09.mgb

1. Design Condition

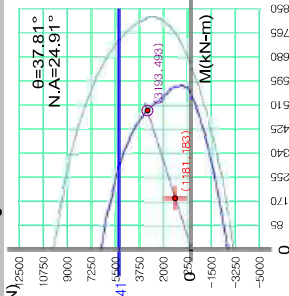
Design Code : KDS 41 20 : 2022
Member Number : 416 (PW), 413, 416 (Shear-y,z)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 1C1 (No : 41)
Rebar Pattern : 20 - 5 - D22
UNIT SYSTEM: kN, m
Ast = 0.007742 m² (pst = 0.022)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 5241.01 kN
Axial Load Ratio : $P_u / \phi P_n$ = 1181.17 / 3193.47 = 0.370 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 182.772 / 482.745 = 0.371 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 144.393 / 389.278 = 0.371 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 112.054 / 302.093 = 0.371 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
6551.26	0.00
6029.83	142.37
5349.22	279.46
4461.27	398.04
3507.04	476.00
2648.77	516.94
2131.00	532.59
1785.51	556.29
1124.40	579.87
175.64	570.65
-1043.44	393.66
-2235.82	125.86
-2632.28	0.00

3. Shear Capacity

[END] y (LCB : 27, POS : J)
Applied Shear Force (V_u) : 88.0603 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 255.298 + 108.964 = 364.261 kN
Shear Ratio : 0.242 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250
z (LCB : 24, POS : J)
Applied Shear Force (V_u) : 101.247 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 226.642 + 74.7253 = 301.368 kN
Shear Ratio : 0.336 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

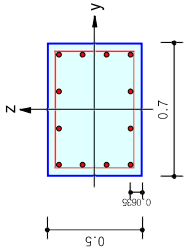
[MIDDLE] y (LCB : 27, POS : 1/2)
Applied Shear Force (V_u) : 88.0603 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 256.064 + 108.964 = 365.028 kN
Shear Ratio : 0.241 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250
z (LCB : 24, POS : 1/2)
Applied Shear Force (V_u) : 101.247 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 227.378 + 74.7253 = 302.104 kN
Shear Ratio : 0.335 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

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Company	Project Title
	File Name
Author	김진익토원 설계에식정중속관련 구조안전성검토_ver.09.mgb

1. Design Condition

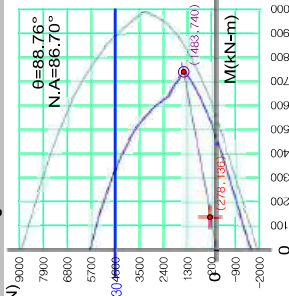
Design Code : KDS 41 20 : 2022
Member Number : 473 (PW), 473 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC14 (No : 94)
Rebar Pattern : 12 - 4 - D22
UNIT SYSTEM: kN, m
Ast = 0.0046452 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 81 (Pos : J)
Concentric Max. Axial Load : ϕP_n -max = 4629.73 kN
Axial Load Ratio : $P_u / \phi P_n$ = 278.478 / 1483.03 = 0.188 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 135.628 / 740.069 = 0.183 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 2.93451 / 16.0125 = 0.183 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 135.596 / 739.896 = 0.183 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
5787.16	0.00
4960.58	252.62
4271.18	409.15
3609.35	513.71
3000.95	580.53
2486.36	621.86
2181.42	642.03
2057.33	664.26
1809.31	701.31
1432.56	745.75
689.12	626.71
-289.74	384.79
-1579.37	0.00

3. Shear Capacity

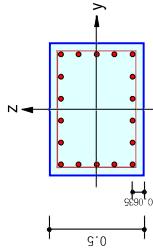
[END] y (LCB : 81, POS : J)
Applied Shear Force (V_u) : 65.1111 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 205.963 + 90.8031 = 296.767 kN
Shear Ratio : 0.219 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300
z (LCB : 101, POS : J)
Applied Shear Force (V_u) : 9.92319 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 196.714 + 62.2711 = 258.985 kN
Shear Ratio : 0.038 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

[MIDDLE] y (LCB : 81, POS : 1/2)
Applied Shear Force (V_u) : 65.1111 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 206.730 + 90.8031 = 297.533 kN
Shear Ratio : 0.219 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300
z (LCB : 101, POS : 1/2)
Applied Shear Force (V_u) : 9.92319 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 197.450 + 62.2711 = 259.721 kN
Shear Ratio : 0.038 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

Certified by :		Project Title	
		File Name	
Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

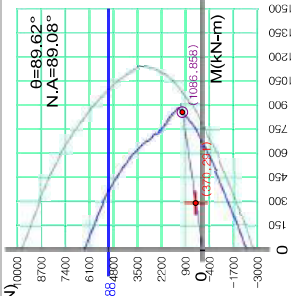
Design Code : KDS 41 20 : 2022
Member Number : 438 (PW), 438, 439 (Shear-y,z)
Material Data : f_{ok} = 24,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C3 (No : 43)
Rebar Pattern : 18 - 5 - D22
UNIT SYSTEM: kN, m
Ast = 0.0069678 m² (pst = 0.020t)



2. Axial and Moments Capacity

Load Combination : 25 (Pos : J)
Concentric Max. Axial Load : ϕP_n-max = 5088.19 kN
Axial Load Ratio : P_u / ϕP_n = 369.790 / 1086.08 = 0.340 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 291.355 / 858.226 = 0.339 < 1.000 O.K
M_cy / ϕM_ny = -1.9576 / 5.76642 = 0.339 < 1.000 O.K
M_cz / ϕM_nz = 291.349 / 858.207 = 0.339 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
6360.23	0.00
5355.32	302.99
4610.27	463.00
3890.48	576.85
3215.56	657.74
2623.47	713.87
2258.62	743.38
2104.71	771.37
1775.51	824.32
1295.55	884.04
430.58	761.24
-751.49	479.78
-2369.05	0.00

3. Shear Capacity

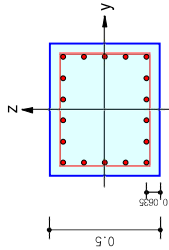
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 166.975 kN
Design Shear Strength (ϕV_c+ϕV_s) : 209.595 + 108.964 = 318.559 kN
Shear Ratio : 0.524 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 166.975 kN
Design Shear Strength (ϕV_c+ϕV_s) : 210.362 + 108.964 = 319.326 kN
Shear Ratio : 0.523 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

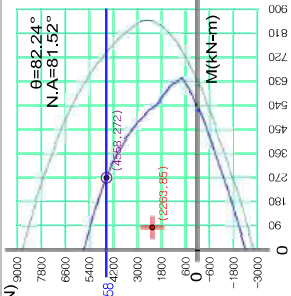
Design Code : KDS 41 20 : 2022
Member Number : 411 (PW), 411, 414 (Shear-y,z)
Material Data : f_{ok} = 24,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C2 (No : 42)
Rebar Pattern : 18 - 5 - D22
UNIT SYSTEM: kN, m
Ast = 0.0069678 m² (pst = 0.022t)



2. Axial and Moments Capacity

Load Combination : 27 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 4557.79 kN
Axial Load Ratio : P_u / ϕP_n = 2262.77 / 4557.79 = 0.496 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 84.8794 / 271.840 = 0.312 < 1.000 O.K
M_cy / ϕM_ny = 11.4575 / 36.6944 = 0.312 < 1.000 O.K
M_cz / ϕM_nz = 84.1025 / 269.352 = 0.312 < 1.000 O.K

P-M Interaction Diagram



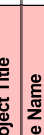
ϕP _n (kN)	ϕM _n (kN-m)
5697.23	0.00
4961.39	188.70
4255.89	325.85
3548.39	423.21
2881.36	489.48
2290.33	533.09
1924.03	554.95
1727.55	580.61
1348.64	616.99
774.97	643.18
-175.46	505.99
-1441.23	234.54
-2369.05	0.00

3. Shear Capacity

[END] y (LCB : 27, POS : J)
Applied Shear Force (V_u) : 50.7159 kN
Design Shear Strength (ϕV_c+ϕV_s) : 251.477 + 91.8445 = 343.321 kN
Shear Ratio : 0.148 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

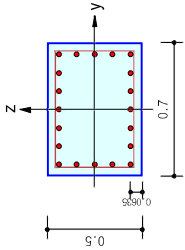
[MIDDLE] y (LCB : 27, POS : 1/2)
Applied Shear Force (V_u) : 50.7159 kN
Design Shear Strength (ϕV_c+ϕV_s) : 252.123 + 91.8445 = 343.968 kN
Shear Ratio : 0.147 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
	
Author	File Name
	김진익로템 설계에식장중속관련 구조안전성검토_ver.09.mgb

1. Design Condition

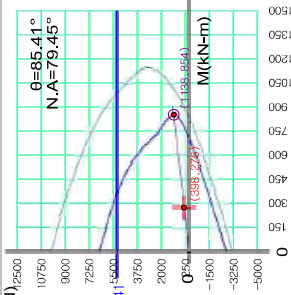
Design Code : KDS 41 20 : 2022
Member Number : 440 (PW), 437, 440 (Shear-y,z)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C14 (No : 54)
Rebar Pattern : 20 - 5 - D22
UNIT SYSTEM: kN, m
Ast = 0.007742 m² (pst = 0.022)



2. Axial and Moments Capacity

Load Combination : 25 (Pos : J)
Concentric Max. Axial Load : ϕP_n-max = 5241.01 kN
Axial Load Ratio : P_U / ϕP_n = 398.208 / 1138.13 = 0.350 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 276.096 / 854.481 = 0.323 < 1.000 O.K
M_cy / ϕM_ny = 22.1054 / 68.4132 = 0.323 < 1.000 O.K
M_cz / ϕM_nz = 275.210 / 851.738 = 0.323 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
6551.26	0.00
5751.00	241.96
4932.93	431.61
4132.12	563.65
3370.39	650.93
2708.92	708.22
2307.97	737.67
2075.14	775.91
1639.62	824.97
968.80	860.96
-141.56	677.23
-1607.77	307.77
-2632.28	0.00

3. Shear Capacity

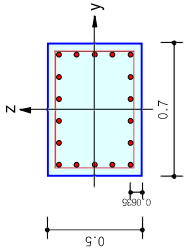
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 180.262 kN
Design Shear Strength (ϕV_c+ϕV_s) : 208.973 + 108.964 = 317.936 kN
Shear Ratio : 0.567 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 180.262 kN
Design Shear Strength (ϕV_c+ϕV_s) : 209.739 + 108.964 = 318.703 kN
Shear Ratio : 0.566 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

z (LCB : 26, POS : J)
Applied Shear Force (V_u) : 27.2377 kN
Design Shear Strength (ϕV_c+ϕV_s) : 202.214 + 74.7253 = 276.939 kN
Shear Ratio : 0.098 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

1. Design Condition

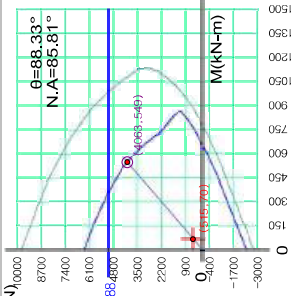
Design Code : KDS 41 20 : 2022
Member Number : 441 (PW), 441 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C9 (No : 49)
Rebar Pattern : 18 - 5 - D22
UNIT SYSTEM: kN, m
Ast = 0.0069678 m² (pst = 0.020)



2. Axial and Moments Capacity

Load Combination : 25 (Pos : J)
Concentric Max. Axial Load : ϕP_n-max = 5088.19 kN
Axial Load Ratio : P_U / ϕP_n = 514.501 / 4062.73 = 0.127 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 69.5579 / 548.748 = 0.127 < 1.000 O.K
M_cy / ϕM_ny = -2.0229 / 15.9591 = 0.127 < 1.000 O.K
M_cz / ϕM_nz = -69.528 / 548.516 = 0.127 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
6360.23	0.00
5434.78	279.64
4672.25	449.02
3931.99	568.05
3239.05	650.38
2634.38	706.02
2263.40	734.68
2089.02	765.25
1737.37	815.95
1217.03	866.85
293.77	725.79
-955.04	420.15
-2369.05	0.00

3. Shear Capacity

[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 41.4957 kN
Design Shear Strength (ϕV_c+ϕV_s) : 213.817 + 108.964 = 322.781 kN
Shear Ratio : 0.129 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 41.4957 kN
Design Shear Strength (ϕV_c+ϕV_s) : 214.584 + 108.964 = 323.548 kN
Shear Ratio : 0.128 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

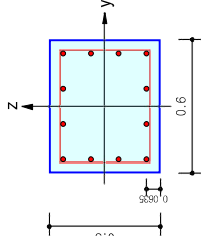
z (LCB : 36, POS : J)
Applied Shear Force (V_u) : 12.8811 kN
Design Shear Strength (ϕV_c+ϕV_s) : 182.449 + 74.7253 = 257.175 kN
Shear Ratio : 0.050 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
Author	File Name
김진오트웬 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

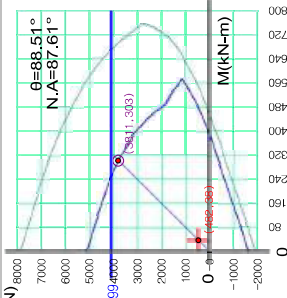
Design Code : KDS 41 20 : 2022
Member Number : 468 (PW) 468 (Shear-yz)
Material Data : f_{ok} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC2 (No : 82)
Rebar Pattern : 12 - 4 - D22
UNIT SYSTEM: kN, m
Ast = 0.0046452 m² (pst = 0.015)



2. Axial and Moments Capacity

Load Combination : 102 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 4099.33 kN
Axial Load Ratio : $P_u / \phi P_n$ = 482.015 / 3811.02 = 0.126 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 38.2490 / 302.537 = 0.126 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -0.9926 / 7.85146 = 0.126 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 38.2362 / 302.435 = 0.126 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
5124.16	0.00
4362.79	196.46
3753.27	312.72
3156.02	391.42
2602.17	443.00
2126.90	476.09
1841.40	492.79
1730.65	509.21
1501.16	537.81
1155.34	572.89
480.28	480.59
-444.31	284.48
-1579.37	0.00

3. Shear Capacity

[END] y (LCB : 102, POS : J)
Applied Shear Force (V_u) : 23.6124 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 181.829 + 76.5371 = 258.366 kN
Shear Ratio : 0.091 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

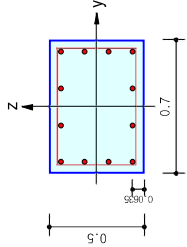
[MIDDLE] z (LCB : 99, POS : I/2)
Applied Shear Force (V_u) : 7.10363 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 172.046 + 62.2711 = 234.317 kN
Shear Ratio : 0.091 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

Certified by :

Company	Project Title
Author	File Name
김진오트웬 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

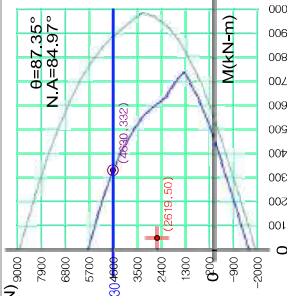
Design Code : KDS 41 20 : 2022
Member Number : 470 (PW) 486 (Shear)
Material Data : f_{ok} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC1 (No : 81)
Rebar Pattern : 12 - 4 - D22
UNIT SYSTEM: kN, m
Ast = 0.0046452 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 81 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 4629.73 kN
Axial Load Ratio : $P_u / \phi P_n$ = 2619.19 / 4629.73 = 0.566 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 49.7317 / 332.228 = 0.150 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -2.3027 / 15.3827 = 0.150 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 49.6783 / 331.872 = 0.150 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
5787.16	0.00
5001.25	240.92
4300.48	402.27
3628.92	509.82
3011.88	577.68
2490.77	618.90
2182.34	638.67
2049.12	661.86
1789.41	698.05
1394.71	737.91
624.77	610.65
-385.16	357.04
-1579.37	0.00

3. Shear Capacity

[END] y (LCB : 102, POS : J)
Applied Shear Force (V_u) : 47.5850 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 253.523 + 90.8031 = 344.326 kN
Shear Ratio : 0.138 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

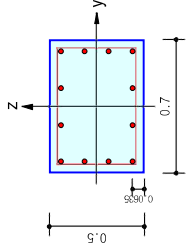
[MIDDLE] z (LCB : 81, POS : I/2)
Applied Shear Force (V_u) : 33.8073 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 254.399 + 62.2711 = 316.671 kN
Shear Ratio : 0.107 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

Certified by :

Company	Project Title
	
Author	File Name
	김진오트렘 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Condition

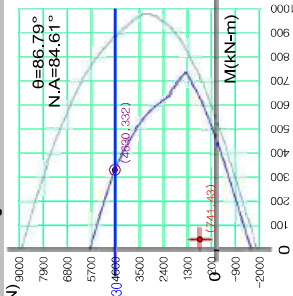
Design Code : KDS 41 20 : 2022
Member Number : 476 (PW), 475 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC9 (No : 89)
Rebar Pattern : 12 - 4 - D22
UNIT SYSTEM: kN, m
Ast = 0.0046452 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 100 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 740.881 / 4629.73 kN
Axial Load Ratio : P_u / ϕP_n = 43.2881 / 331.688
Moment Ratio : M_c / ϕM_n = -2.4203 / 18.5455
M_{cz} / ϕM_{nz} = -43.2220 / 331.169
= 0.160 < 1.000 O.K
= 0.131 < 1.000 O.K
= 0.131 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
5787.16	0.00
5009.58	238.55
4306.48	400.85
3632.93	508.98
3014.12	577.04
2491.67	618.22
2182.53	637.91
2047.44	661.29
1785.34	697.30
1386.97	736.25
611.59	607.36
-404.70	351.43
-1579.37	0.00

3. Shear Capacity

[END] y (LCB : 100, POS : J)
Applied Shear Force (V_u) : 29.8307 kN
Design Shear Strength (ϕV_c+ϕV_s) : 216.712 + 90.8031 = 307.515 kN
Shear Ratio : 0.097 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

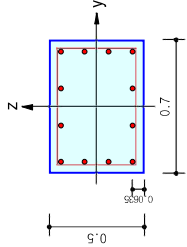
[MIDDLE] y (LCB : 100, POS : I/2)
Applied Shear Force (V_u) : 29.8307 kN
Design Shear Strength (ϕV_c+ϕV_s) : 217.478 + 90.8031 = 308.282 kN
Shear Ratio : 0.097 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

Certified by :

Company	Project Title
	
Author	File Name
	김진오트렘 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Condition

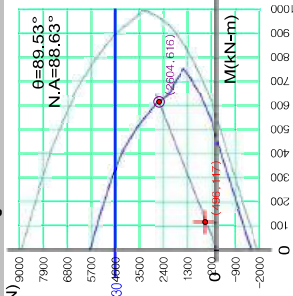
Design Code : KDS 41 20 : 2022
Member Number : 474 (PW), 474 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC3 (No : 83)
Rebar Pattern : 12 - 4 - D22
UNIT SYSTEM: kN, m
Ast = 0.0046452 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 81 (Pos : J)
Concentric Max. Axial Load : ϕP_n-max = 4629.73 kN
Axial Load Ratio : P_u / ϕP_n = 495.609 / 2603.65
Moment Ratio : M_c / ϕM_n = 117.146 / 615.807
M_{cy} / ϕM_{ny} = 0.396373 / 5.06609
M_{cz} / ϕM_{nz} = 117.142 / 615.786
= 0.190 < 1.000 O.K
= 0.190 < 1.000 O.K
= 0.190 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
5787.16	0.00
4915.43	265.76
4238.65	416.87
3587.63	518.06
2988.81	583.71
2481.47	625.13
2180.39	645.75
2066.43	666.91
1831.40	704.94
1474.57	754.50
760.56	644.75
-183.83	415.94
-1579.37	0.00

3. Shear Capacity

[END] y (LCB : 81, POS : J)
Applied Shear Force (V_u) : 56.2474 kN
Design Shear Strength (ϕV_c+ϕV_s) : 214.599 + 90.8031 = 305.402 kN
Shear Ratio : 0.184 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

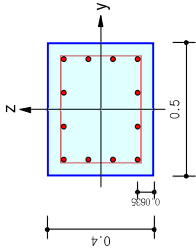
[MIDDLE] y (LCB : 81, POS : I/2)
Applied Shear Force (V_u) : 56.2474 kN
Design Shear Strength (ϕV_c+ϕV_s) : 215.366 + 90.8031 = 306.169 kN
Shear Ratio : 0.184 < 1.000 O.K
As-H_{use} : 0.00048 m²/m, 2-D10 @300

Certified by :

Company	Project Title
Author	File Name
김진오트웬 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

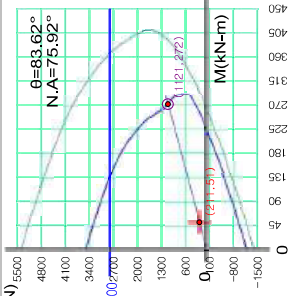
Design Code : KDS 41 20 : 2022
Member Number : 489 (PW) 492 (Shear)
Material Data : f_{ok} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC10 (No : 64)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 81 (Pos : J)
Concentric Max. Axial Load : ϕP_n -max = 2800.23 kN
Axial Load Ratio : $P_u / \phi P_n$ = 211.019 / 1121.26 = 0.188 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 51.2892 / 272.450 = 0.188 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 5.69750 / 30.2654 = 0.188 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = -50.972 / 270.764 = 0.188 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
3145.71	76.80
2675.85	156.73
2215.14	209.91
1786.22	241.64
1414.17	258.96
1188.84	266.41
1062.70	277.40
835.94	288.63
482.42	288.77
-121.59	204.39
-859.00	66.81
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 102, POS : J)
Applied Shear Force (V_u) : 28.4259 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 114.324 + 74.7253 = 189.049 kN
Shear Ratio : 0.150 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

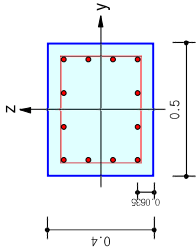
[MIDDLE] z (LCB : 101, POS : 1/2)
Applied Shear Force (V_u) : 28.4259 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 114.744 + 74.7253 = 189.470 kN
Shear Ratio : 0.150 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
Author	File Name
김진오트웬 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

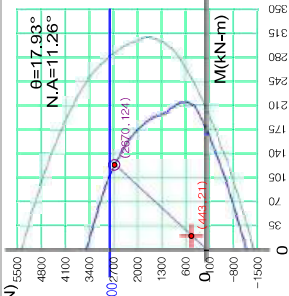
Design Code : KDS 41 20 : 2022
Member Number : 495 (PW) 495 (Shear)
Material Data : f_{ok} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : BC9 (No : 63)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 100 (Pos : J)
Concentric Max. Axial Load : ϕP_n -max = 2800.23 kN
Axial Load Ratio : $P_u / \phi P_n$ = 443.390 / 2669.96 = 0.166 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 20.6109 / 123.725 = 0.167 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -19.610 / 117.717 = 0.167 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 6.34468 / 38.0864 = 0.167 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
3146.12	61.51
2706.16	120.13
2220.99	162.79
1763.31	186.19
1364.66	197.49
1122.69	201.71
993.14	207.98
731.39	215.17
340.58	209.34
-278.21	141.45
-907.35	47.45
-1168.92	0.00

3. Shear Capacity

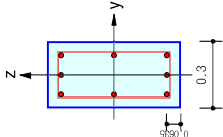
[END] y (LCB : 100, POS : J)
Applied Shear Force (V_u) : 5.81268 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 123.851 + 74.7253 = 198.577 kN
Shear Ratio : 0.029 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] z (LCB : 99, POS : 1/2)
Applied Shear Force (V_u) : 5.81268 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 124.272 + 74.7253 = 198.997 kN
Shear Ratio : 0.029 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
		Author		File Name	
		MIDAS		김진오로옴 설계예시정중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

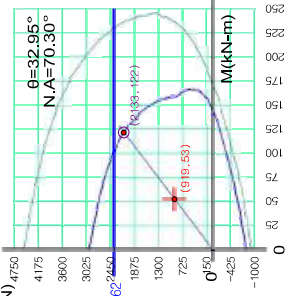
Design Code : KDS 411 20 : 2022
Member Number : 452 (PW) 452 (Shear)
Material Data : f_{ok} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C2-7/12 (No : 12)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : J)
Concentric Max. Axial Load : φP_n-max = 2361.86 kN
Axial Load Ratio : P_u / φP_n = 918.506 / 2133.30 = 0.431 < 1.000 O.K
Moment Ratio : M_c / φM_n = 52.5039 / 121.710 = 0.431 < 1.000 O.K
M_cy / φM_ny = 44.058 / 102.132 = 0.431 < 1.000 O.K
M_cz / φM_nz = 28.557 / 66.1990 = 0.431 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
2952.33	0.00
2761.92	44.04
2433.91	95.42
1981.95	131.39
1517.08	150.89
1117.39	158.22
884.47	159.75
756.07	162.96
484.46	167.21
114.51	156.55
-339.22	97.52
-659.34	31.79
-779.28	0.00

3. Shear Capacity

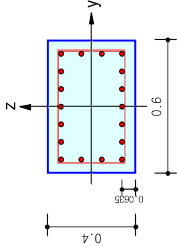
[END] y (LCB : 27, POS : J)
Applied Shear Force (V_u) : 4,19715 kN
Design Shear Strength (φV_c+φV_s) : 116,927 + 40,4869 = 157,414 kN
Shear Ratio : 0.027 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 27, POS : 1/2)
Applied Shear Force (V_u) : 4,19715 kN
Design Shear Strength (φV_c+φV_s) : 117,269 + 40,4869 = 157,756 kN
Shear Ratio : 0.027 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
		Author		File Name	
		MIDAS		김진오로옴 설계예시정중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

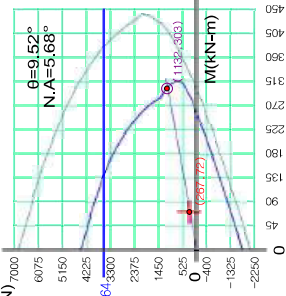
Design Code : KDS 411 20 : 2022
Member Number : 456 (PW) 456 (Shear)
Material Data : f_{ok} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C1-7/11 (No : 11)
Rebar Pattern : 18 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.005157 m² (pst = 0.021)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : J)
Concentric Max. Axial Load : φP_n-max = 3563.87 kN
Axial Load Ratio : P_u / φP_n = 267.301 / 1132.05 = 0.236 < 1.000 O.K
Moment Ratio : M_c / φM_n = 71.6956 / 302.697 = 0.237 < 1.000 O.K
M_cy / φM_ny = 70.7084 / 298.529 = 0.237 < 1.000 O.K
M_cz / φM_nz = 11.8565 / 50.0578 = 0.237 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
4454.84	0.00
3844.00	101.77
3308.81	169.19
2725.47	221.52
2165.86	255.01
1670.21	276.03
1364.30	286.70
1236.94	296.09
975.62	310.61
552.87	312.93
-200.85	231.55
-1176.20	93.51
-1753.38	0.00

3. Shear Capacity

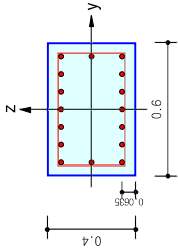
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 19,3237 kN
Design Shear Strength (φV_c+φV_s) : 143,749 + 91,8445 = 235,594 kN
Shear Ratio : 0.082 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 19,3237 kN
Design Shear Strength (φV_c+φV_s) : 144,266 + 91,8445 = 236,111 kN
Shear Ratio : 0.082 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
MIDAS		Author		File Name	
				김진익로템 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

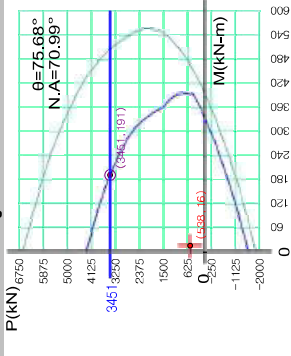
Design Code : KDS 411 20 : 2022
Member Number : 458 (PW) 457 (Shear)
Material Data : f_{ok} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C4-7 $\frac{1}{16}$ (No : 14)
Rebar Pattern : 16 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.004584 m² (pst = 0.019)



2. Axial and Moments Capacity

Load Combination : 25 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 3450.76 kN
Axial Load Ratio : $P_u / \phi P_n$ = 537.959 / 3450.76 = 0.156 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 15.5676 / 190.820 = 0.082 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 3.85009 / 47.1925 = 0.082 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = -15.084 / 184.892 = 0.082 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
4313.46	0.00
3911.29	102.48
3358.80	209.85
2789.75	285.84
329.27	329.27
2250.10	352.06
1785.65	361.21
1504.93	376.39
1327.88	393.58
979.46	392.47
431.70	274.58
-371.73	87.86
-1238.40	0.00
-1558.56	0.00

3. Shear Capacity

[END] y (LCB : 39, POS : J)
Applied Shear Force (Vu) : 12.6793 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 118.484 + 91.8445 = 210.328 kN
Shear Ratio : 0.060 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 39, POS : 1/2)
Applied Shear Force (Vu) : 12.6793 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 120.034 + 91.8445 = 211.879 kN
Shear Ratio : 0.060 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

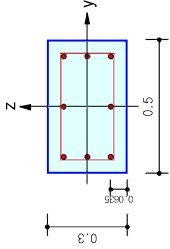
[END] z (LCB : 26, POS : J)
Applied Shear Force (Vu) : 5.50006 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 136.681 + 57.6061 = 194.287 kN
Shear Ratio : 0.028 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] z (LCB : 26, POS : 1/2)
Applied Shear Force (Vu) : 5.50006 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 137.167 + 57.6061 = 194.773 kN
Shear Ratio : 0.028 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
MIDAS		Author		File Name	
				김진익로템 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

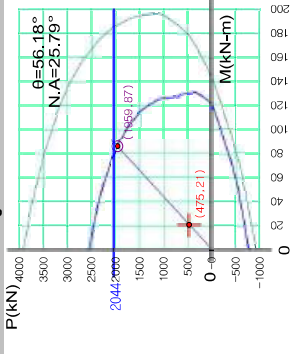
Design Code : KDS 411 20 : 2022
Member Number : 450 (PW) 450 (Shear)
Material Data : f_{ok} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C3-7 $\frac{1}{16}$ (No : 13)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.015)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : J)
Concentric Max. Axial Load : ϕP_n -max = 2043.62 kN
Axial Load Ratio : $P_u / \phi P_n$ = 475.028 / 1959.41 = 0.242 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 20.9952 / 86.5496 = 0.243 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -11.687 / 48.1779 = 0.243 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 17.4417 / 71.9008 = 0.243 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
2554.53	0.00
2382.46	34.23
2099.97	73.49
1716.21	104.47
1297.84	121.53
921.48	127.23
708.85	127.96
592.65	129.77
348.38	131.36
7.06	122.13
-395.69	73.82
-697.33	19.02
-779.28	0.00

3. Shear Capacity

[END] y (LCB : 25, POS : J)
Applied Shear Force (Vu) : 11.3460 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 87.4751 + 74.7253 = 162.200 kN
Shear Ratio : 0.070 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (Vu) : 11.3460 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 87.7905 + 74.7253 = 162.516 kN
Shear Ratio : 0.070 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[END] z (LCB : 38, POS : J)
Applied Shear Force (Vu) : 1.85994 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 65.1216 + 40.4869 = 105.608 kN
Shear Ratio : 0.018 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

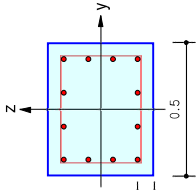
[MIDDLE] z (LCB : 38, POS : 1/2)
Applied Shear Force (Vu) : 1.85994 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 65.9761 + 40.4869 = 106.463 kN
Shear Ratio : 0.017 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
Author	File Name
MIDAS	김진오로열 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Condition

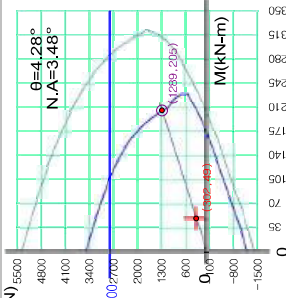
Design Code : KDS 41 20 : 2022
Member Number : 430 (PW) 430 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 1C9 (No : 20)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : J)
Concentric Max. Axial Load : φP_n-max = 2800.23 kN
Axial Load Ratio : P_u / φP_n = 302.358 / 1289.03 = 0.235 < 1.000 O.K
Moment Ratio : M_c / φM_n = 48.5794 / 205.460 = 0.236 < 1.000 O.K
M_cy / φM_ny = 48.444 / 204.887 = 0.236 < 1.000 O.K
M_cz / φM_nz = -3.6263 / 15.3371 = 0.236 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
3500.29	0.00
3005.91	81.14
2573.15	133.17
2132.14	169.15
1716.29	190.94
1352.44	203.67
1130.25	209.75
1042.38	215.68
856.63	225.65
551.73	229.30
-18.03	172.19
-696.97	77.32
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 24, POS : J)
Applied Shear Force (V_u) : 2.44452 kN
Design Shear Strength (φV_c+φV_s) : 114.089 + 74.7253 = 188.815 kN
Shear Ratio : 0.013 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

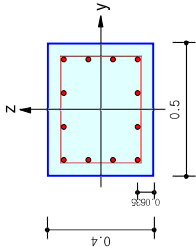
[MIDDLE] y (LCB : 24, POS : 1/2)
Applied Shear Force (V_u) : 2.44452 kN
Design Shear Strength (φV_c+φV_s) : 114.510 + 74.7253 = 189.235 kN
Shear Ratio : 0.013 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
Author	File Name
MIDAS	김진오로열 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Condition

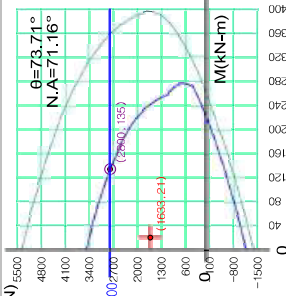
Design Code : KDS 41 20 : 2022
Member Number : 428 (PW) 426, 428 (Shear-y,z)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 1C7 (No : 18)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : φP_n-max = 2800.23 kN
Axial Load Ratio : P_u / φP_n = 1633.40 / 2800.23 = 0.583 < 1.000 O.K
Moment Ratio : M_c / φM_n = 20.6408 / 134.997 = 0.153 < 1.000 O.K
M_cy / φM_ny = 5.79040 / 37.8710 = 0.153 < 1.000 O.K
M_cz / φM_nz = -19.812 / 129.577 = 0.153 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
3500.29	0.00
3178.04	71.18
2725.83	147.46
2248.10	202.83
1798.53	234.93
1409.53	251.16
1174.84	257.58
1037.38	267.54
781.41	277.14
395.37	272.26
-215.85	187.74
-929.51	56.60
-1168.92	0.00

3. Shear Capacity

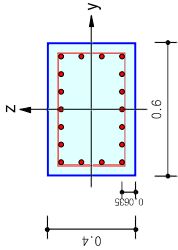
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 15.0646 kN
Design Shear Strength (φV_c+φV_s) : 159.953 + 74.7253 = 234.679 kN
Shear Ratio : 0.064 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 15.0646 kN
Design Shear Strength (φV_c+φV_s) : 160.374 + 74.7253 = 235.099 kN
Shear Ratio : 0.064 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb			

1. Design Condition

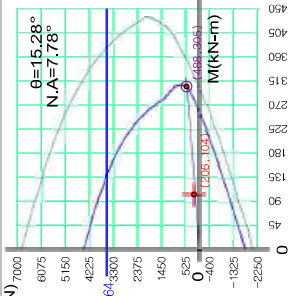
Design Code : KDS 41 20 : 2022
Member Number : 512 (PW), 512, 511 (Shear-y,z)
Material Data : f_{ok} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C14-7 $\frac{1}{4}$ (No : 101)
Rebar Pattern : 18 - 4 - D19 A_{st} = 0.005157 m² (p_{st} = 0.021)



2. Axial and Moments Capacity

Load Combination : 18 (Pos : I)
Concentric Max. Axial Load ϕP_n -max = 3563.87 kN
Axial Load Ratio $P_u / \phi P_n$ = 205.565 / 487.836 = 0.421 < 1.000 O.K
Moment Ratio $M_c / \phi M_n$ = 103.738 / 305.408 = 0.340 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -100.07 / 294.617 = 0.340 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = -27.332 / 80.4663 = 0.340 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
4454.84	0.00
3896.07	94.76
3364.72	164.19
2765.26	218.82
2189.76	252.72
1680.97	272.98
1367.43	282.77
1221.03	292.57
923.69	306.18
462.26	305.02
-312.64	219.68
-1258.70	82.34
-1753.38	0.00

3. Shear Capacity

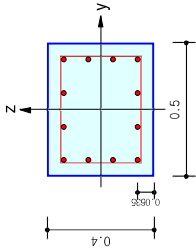
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) 28.2368 kN
Design Shear Strength ($\phi V_c + \phi V_s$) 140.541 + 91.8445 = 232.386 kN
Shear Ratio 0.122 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) 28.2368 kN
Design Shear Strength ($\phi V_c + \phi V_s$) 141.058 + 91.8445 = 232.903 kN
Shear Ratio 0.121 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb			

1. Design Condition

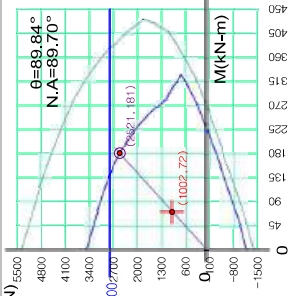
Design Code : KDS 41 20 : 2022
Member Number : 425 (PW), 427, 425 (Shear-y,z)
Material Data : f_{ok} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 1C10 (No : 21)
Rebar Pattern : 12 - 4 - D19 A_{st} = 0.003438 m² (p_{st} = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load ϕP_n -max = 2800.23 kN
Axial Load Ratio $P_u / \phi P_n$ = 1002.02 / 2521.13 = 0.397 < 1.000 O.K
Moment Ratio $M_c / \phi M_n$ = 71.9229 / 181.013 = 0.397 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -0.1986 / 0.49977 = 0.397 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 71.9226 / 181.013 = 0.397 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
2943.11	117.36
2526.20	180.44
2115.63	222.98
1730.72	251.51
1395.90	270.59
1192.55	280.72
1122.76	289.20
971.78	305.54
746.15	327.75
242.05	269.17
-412.91	154.37
-1168.92	0.00

3. Shear Capacity

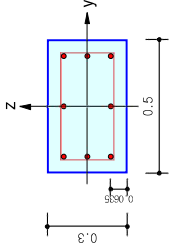
[END] y (LCB : 6, POS : J)
Applied Shear Force (V_u) 40.4597 kN
Design Shear Strength ($\phi V_c + \phi V_s$) 123.796 + 74.7253 = 198.521 kN
Shear Ratio 0.204 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 6, POS : 1/2)
Applied Shear Force (V_u) 40.4597 kN
Design Shear Strength ($\phi V_c + \phi V_s$) 124.217 + 74.7253 = 198.942 kN
Shear Ratio 0.203 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익토원 설계에식장중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

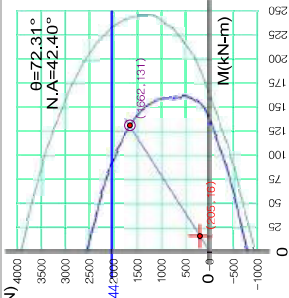
Design Code : KDS 41 20 : 2022
Member Number : 519 (PW), 519 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C3-7 $\frac{1}{2}$ (No : 103)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.015)



2. Axial and Moments Capacity

Load Combination : 27 (Pos : J)
Concentric Max. Axial Load : ϕP_n -max = 2043.62 kN
Axial Load Ratio : $P_u / \phi P_n$ = 205.267 / 1661.63 = 0.124 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 16.2168 / 131.351 = 0.123 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 4.92640 / 39.9023 = 0.123 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = -15.450 / 125.143 = 0.123 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
2554.53	0.00
2377.66	38.70
2102.77	83.84
1699.70	128.56
1295.59	152.87
961.51	159.87
744.32	159.30
619.45	160.28
391.72	160.33
74.13	147.56
-351.91	87.41
-672.62	24.22
-779.28	0.00

3. Shear Capacity

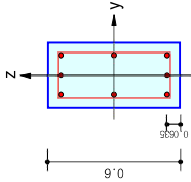
[END] y (LCB : 26, POS : J)
Applied Shear Force (V_u) : 7.59123 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 81.4816 + 74.7253 = 156.207 kN
Shear Ratio : 0.049 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 26, POS : 1/2)
Applied Shear Force (V_u) : 7.59123 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 81.7971 + 74.7253 = 156.522 kN
Shear Ratio : 0.048 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익토원 설계에식장중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

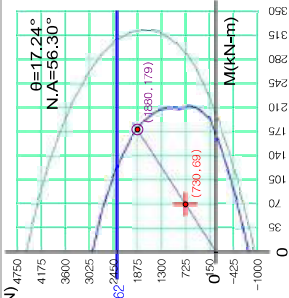
Design Code : KDS 41 20 : 2022
Member Number : 518 (PW), 518 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C2-7 $\frac{1}{2}$ (No : 102)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 2361.86 kN
Axial Load Ratio : $P_u / \phi P_n$ = 730.185 / 1880.04 = 0.388 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 69.2276 / 178.543 = 0.388 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 66.1188 / 170.525 = 0.388 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 20.5127 / 152.9037 = 0.388 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
2952.33	0.00
2760.46	51.01
2450.64	110.06
2018.22	166.46
1555.47	200.66
1142.29	210.20
902.97	208.72
769.38	210.77
511.17	211.02
161.20	195.12
-295.18	117.61
-648.99	35.28
-779.28	0.00

3. Shear Capacity

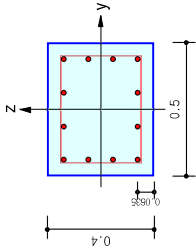
[END] y (LCB : 27, POS : J)
Applied Shear Force (V_u) : 3.93003 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 110.039 + 40.4869 = 150.526 kN
Shear Ratio : 0.026 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 27, POS : 1/2)
Applied Shear Force (V_u) : 3.93003 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 110.381 + 40.4869 = 150.868 kN
Shear Ratio : 0.026 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
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MIDAS					
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1. Design Condition

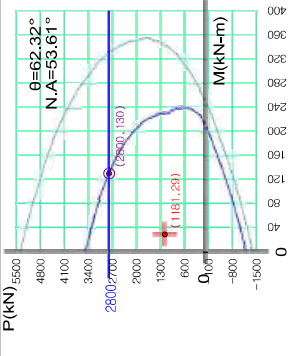
Design Code : KDS 41 20 : 2022
Member Number : 507 (PW), 507 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C7 (No : 105)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 2800.23 kN
Axial Load Ratio : P_u / ϕP_n = 1180.91 / 2800.23 = 0.422 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 29.2622 / 129.814 = 0.225 < 1.000 O.K
M_{cy} / ϕM_{ny} = 13.5924 / 60.2991 = 0.225 < 1.000 O.K
M_{cz} / ϕM_{nz} = 25.9137 / 114.959 = 0.225 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
3500.29	0.00
3245.27	57.32
2867.86	121.93
2361.04	180.73
1830.85	215.68
1373.27	228.68
1095.41	230.74
929.69	236.61
590.95	240.47
122.43	226.02
-467.37	143.68
-1006.27	40.64
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 27, POS : J)
Applied Shear Force (V_u) : 17,2001 kN
Design Shear Strength (ϕV_c+ϕV_s) : 146,320 + 74,7253 = 221,045 kN
Shear Ratio : 0.078 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 27, POS : I/2)
Applied Shear Force (V_u) : 17,2001 kN
Design Shear Strength (ϕV_c+ϕV_s) : 146,740 + 74,7253 = 221,466 kN
Shear Ratio : 0.078 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

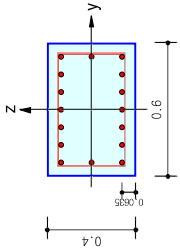
[END] z (LCB : 24, POS : J)
Applied Shear Force (V_u) : 13,1444 kN
Design Shear Strength (ϕV_c+ϕV_s) : 140,464 + 57,6061 = 198,070 kN
Shear Ratio : 0.066 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] z (LCB : 24, POS : I/2)
Applied Shear Force (V_u) : 13,1444 kN
Design Shear Strength (ϕV_c+ϕV_s) : 140,869 + 57,6061 = 198,475 kN
Shear Ratio : 0.066 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
Author		File Name			
MIDAS					
				김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

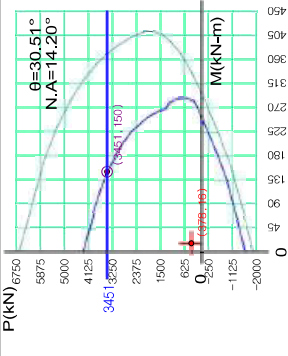
Design Code : KDS 41 20 : 2022
Member Number : 514 (PW), 513 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C4-7 (No : 104)
Rebar Pattern : 16 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.004584 m² (pst = 0.019)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 3450.76 kN
Axial Load Ratio : P_u / ϕP_n = 378.224 / 3450.76 = 0.110 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 16.1100 / 150.007 = 0.107 < 1.000 O.K
M_{cy} / ϕM_{ny} = 13.8795 / 129.238 = 0.107 < 1.000 O.K
M_{cz} / ϕM_{nz} = 8.17873 / 76.1558 = 0.107 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
4313.46	0.00
3931.80	76.22
3429.35	152.32
2797.34	210.05
2199.86	243.73
1679.25	261.46
1361.85	268.72
1174.46	279.06
810.04	288.54
291.78	282.22
-508.59	189.70
-1314.79	55.97
-1558.56	0.00

3. Shear Capacity

[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 15,6864 kN
Design Shear Strength (ϕV_c+ϕV_s) : 141,348 + 91,8445 = 233,193 kN
Shear Ratio : 0.067 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : I/2)
Applied Shear Force (V_u) : 15,6864 kN
Design Shear Strength (ϕV_c+ϕV_s) : 141,865 + 91,8445 = 233,710 kN
Shear Ratio : 0.067 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

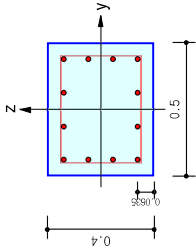
[END] z (LCB : 24, POS : J)
Applied Shear Force (V_u) : 7,76067 kN
Design Shear Strength (ϕV_c+ϕV_s) : 125,113 + 57,6061 = 182,719 kN
Shear Ratio : 0.042 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] z (LCB : 24, POS : I/2)
Applied Shear Force (V_u) : 7,76067 kN
Design Shear Strength (ϕV_c+ϕV_s) : 125,599 + 57,6061 = 183,206 kN
Shear Ratio : 0.042 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

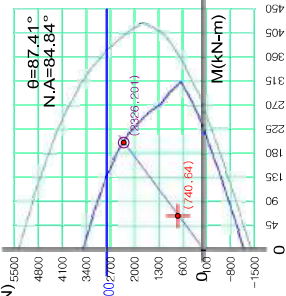
Design Code : KDS 41 20 : 2022
Member Number : 505 (PW), 506, 505 (Shear-y,z)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C10 (No : 108)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 2800.23 kN
Axial Load Ratio : $P_u / \phi P_n$ = 740.188 / 2325.66 = 0.318 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 63.9146 / 200.994 = 0.318 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = -2.8872 / 9.07955 = 0.318 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 63.8494 / 200.788 = 0.318 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
3014.58	102.67
2578.98	171.71
2150.73	218.03
1750.30	247.70
1402.34	266.14
1191.24	275.29
1101.58	284.66
923.87	299.13
653.13	313.43
113.79	245.62
-570.26	122.83
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 6, POS : J)
Applied Shear Force (V_u) : 43.8684 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 118.963 + 74.7253 = 193.688 kN
Shear Ratio : 0.226 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

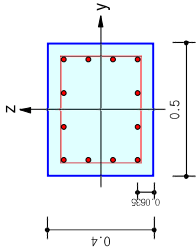
[MIDDLE] y (LCB : 6, POS : 1/2)
Applied Shear Force (V_u) : 43.8684 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 119.383 + 74.7253 = 194.109 kN
Shear Ratio : 0.226 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

z (LCB : 26, POS : J)
Applied Shear Force (V_u) : 9.36581 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 127.637 + 57.6061 = 185.243 kN
Shear Ratio : 0.051 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

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Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

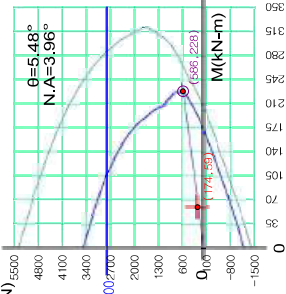
Design Code : KDS 41 20 : 2022
Member Number : 521 (PW), 521 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 2C9 (No : 107)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 2800.23 kN
Axial Load Ratio : $P_u / \phi P_n$ = 173.862 / 586.384 = 0.296 < 1.000 O.K
Moment Ratio : $M_u / \phi M_n$ = 59.2769 / 227.985 = 0.260 < 1.000 O.K
 $M_{cy} / \phi M_{ny}$ = 59.0057 / 226.942 = 0.260 < 1.000 O.K
 $M_{cz} / \phi M_{nz}$ = 5.66417 / 21.7850 = 0.260 < 1.000 O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
3014.55	79.79
2581.34	132.18
2137.61	168.61
1719.19	190.51
1353.19	203.12
1129.78	209.07
1039.34	215.01
848.91	224.78
538.72	227.76
-34.06	169.97
-709.94	75.31
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 27, POS : J)
Applied Shear Force (V_u) : 3.45556 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 113.476 + 74.7253 = 188.202 kN
Shear Ratio : 0.018 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

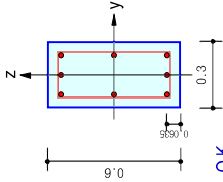
[MIDDLE] y (LCB : 27, POS : 1/2)
Applied Shear Force (V_u) : 3.45556 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 113.897 + 74.7253 = 188.622 kN
Shear Ratio : 0.018 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

z (LCB : 6, POS : J)
Applied Shear Force (V_u) : 35.1960 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 111.098 + 57.6061 = 168.704 kN
Shear Ratio : 0.209 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

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		MIDAS		김진익로템 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

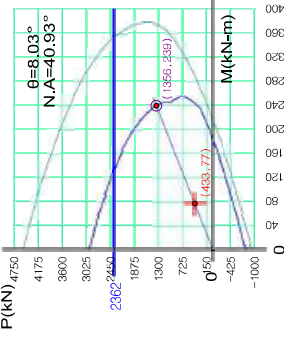
Design Code : KDS 41 20 : 2022
Member Number : 537 (PW) 537 (Shear)
Material Data : f_{ok} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 3C2 (No : 132)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 2361.86 kN
Axial Load Ratio : P_u / ϕP_n = 433.128 / 1355.58 = 0.320 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 76.5030 / 239.145 = 0.320 < 1.000 O.K
M_cy / ϕM_ny = 75.7534 / 236.801 = 0.320 < 1.000 O.K
M_cz / ϕM_nz = 10.6832 / 33.3952 = 0.320 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
2952.33	0.00
2731.30	59.15
2392.44	129.17
1947.27	195.98
1548.23	230.62
1204.04	244.29
988.14	246.01
862.76	250.88
637.90	252.61
310.27	235.42
-169.66	149.72
-592.03	49.15
-779.28	0.00

3. Shear Capacity

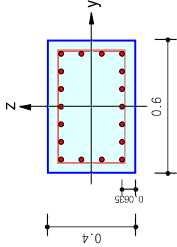
[END] y (LCB : 26, POS : J)
Applied Shear Force (V_u) : 4.22612 kN
Design Shear Strength (ϕV_c+ϕV_s) : 101.053 + 40.4869 = 141.540 kN
Shear Ratio : 0.030 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 26, POS : 1/2)
Applied Shear Force (V_u) : 4.22612 kN
Design Shear Strength (ϕV_c+ϕV_s) : 101.395 + 40.4869 = 141.882 kN
Shear Ratio : 0.030 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Company		Project Title	
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		MIDAS		김진익로템 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

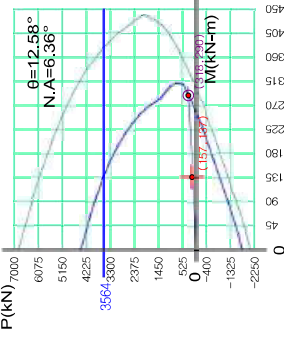
Design Code : KDS 41 20 : 2022
Member Number : 531 (PW) 532, 542 (Shear-y,z)
Material Data : f_{ok} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 3C1 (No : 131)
Rebar Pattern : 18 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.005157 m² (pst = 0.021)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 3563.87 kN
Axial Load Ratio : P_u / ϕP_n = 157.038 / 318.047 = 0.494 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 136.715 / 289.904 = 0.472 < 1.000 O.K
M_cy / ϕM_ny = -133.43 / 282.948 = 0.472 < 1.000 O.K
M_cz / ϕM_nz = -29.769 / 63.1245 = 0.472 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
4454.84	0.00
3860.89	99.42
3326.95	167.49
2738.38	220.47
2173.62	254.04
1673.70	274.80
1365.32	285.18
1231.77	294.71
958.77	308.94
523.47	310.20
-237.12	227.65
-1202.96	89.81
-1753.38	0.00

3. Shear Capacity

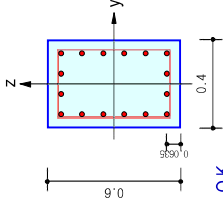
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 26.6467 kN
Design Shear Strength (ϕV_c+ϕV_s) : 137.172 + 91.8445 = 229.017 kN
Shear Ratio : 0.116 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 26.6467 kN
Design Shear Strength (ϕV_c+ϕV_s) : 137.689 + 91.8445 = 229.533 kN
Shear Ratio : 0.116 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
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Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

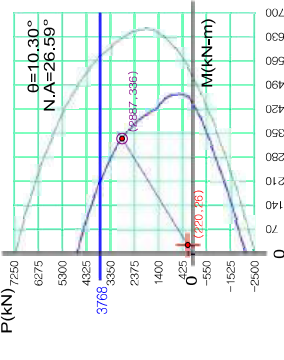
Design Code : KDS 41 20 : 2022
Member Number : 540 (PW) 533 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 3C4 (No : 134)
Rebar Pattern : 16 - 6 - D22
UNIT SYSTEM: kN, m
Ast = 0.0061936 m² (pst = 0.026%)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 37,68.49 kN
Axial Load Ratio : P_u / ϕP_n = 219.701 / 2886.88 = 0.076 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 25.5343 / 335.552 = 0.076 < 1.000 O.K
M_cy / ϕM_ny = 25.1232 / 330.149 = 0.076 < 1.000 O.K
M_cz / ϕM_nz = 4.56367 / 59.9720 = 0.076 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
4710.61	0.00
4269.89	112.89
3711.41	223.27
3053.92	318.66
2420.67	376.32
1864.10	408.70
1517.70	422.09
1292.35	442.74
851.97	464.75
456.23	456.23
-772.20	308.37
-1757.69	92.71
-2105.82	0.00

3. Shear Capacity

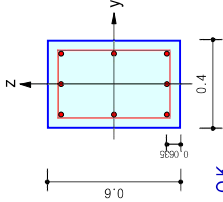
[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 6.61291 kN
Design Shear Strength (ϕV_c+ϕV_s) : 129.111 + 57.6061 = 186.717 kN
Shear Ratio : 0.035 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 6.61291 kN
Design Shear Strength (ϕV_c+ϕV_s) : 129.598 + 57.6061 = 187.204 kN
Shear Ratio : 0.039 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
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Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

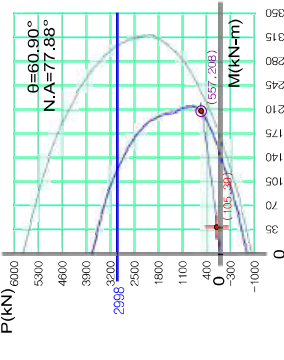
Design Code : KDS 41 20 : 2022
Member Number : 536 (PW) 536 (Shear)
Material Data : f_{ck} = 24,000, f_y = 400,000, f_{ys} = 400,000 KPa
Column Height : 3.9 m
Section Property : 3C3 (No : 133)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.010 < ϕ_{min} = 0.010)



2. Axial and Moments Capacity

Load Combination : 26 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 2998.34 kN
Axial Load Ratio : P_u / ϕP_n = 104.688 / 557.214 = 0.188 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 39.0437 / 208.005 = 0.188 < 1.000 O.K
M_cy / ϕM_ny = -18.989 / 101.165 = 0.188 < 1.000 O.K
M_cz / ϕM_nz = 34.1148 / 181.747 = 0.188 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
3747.93	0.00
3438.45	60.83
2989.91	126.78
2448.55	173.67
1961.08	197.19
1554.03	205.53
1315.17	206.90
1194.56	211.00
946.60	215.21
568.04	209.16
-13.61	140.77
-520.19	53.92
-779.28	0.00

3. Shear Capacity

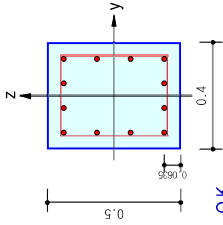
[END] y (LCB : 26, POS : J)
Applied Shear Force (V_u) : 20.7999 kN
Design Shear Strength (ϕV_c+ϕV_s) : 126.517 + 57.6061 = 184.124 kN
Shear Ratio : 0.113 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 26, POS : 1/2)
Applied Shear Force (V_u) : 20.7999 kN
Design Shear Strength (ϕV_c+ϕV_s) : 127.004 + 57.6061 = 184.610 kN
Shear Ratio : 0.113 < 1.000 O.K
As-H_use : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익토원 설계에시정중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

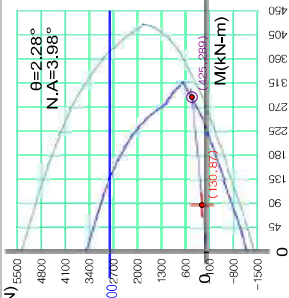
Design Code : KDS 41 20 : 2022
Member Number : 534 (PW), 534 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 3C9 (No : 137)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : 2800.23 kN
Axial Load Ratio : $\frac{P_u}{\phi P_n} = 129.536 / 425.424 = 0.304 < 1.000$ O.K
Moment Ratio : $\frac{M_u}{\phi M_n} = 87.4352 / 289.221 = 0.302 < 1.000$ O.K
 $\frac{M_{cy}}{\phi M_{ny}} = 87.3662 / 288.992 = 0.302 < 1.000$ O.K
 $\frac{M_{cz}}{\phi M_{nz}} = 3.47272 / 11.4872 = 0.302 < 1.000$ O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
2997.25	106.20
2566.19	173.79
2142.22	219.19
1745.55	248.59
1400.78	267.17
1191.56	276.57
1106.71	285.71
935.48	300.64
675.68	316.84
144.88	251.27
-532.11	130.43
-1168.92	0.00

3. Shear Capacity

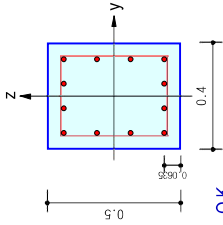
[END] y (LCB : 24, POS : J)
Applied Shear Force (V_u) : 1.86063 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 106.988 + 57.6061 = 164.594 kN
Shear Ratio : $\frac{V_u}{\phi V_c} = 0.011 < 1.000$ O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 24, POS : 1/2)
Applied Shear Force (V_u) : 1.86063 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 107.393 + 57.6061 = 164.999 kN
Shear Ratio : $\frac{V_u}{\phi V_c} = 0.011 < 1.000$ O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익토원 설계에시정중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

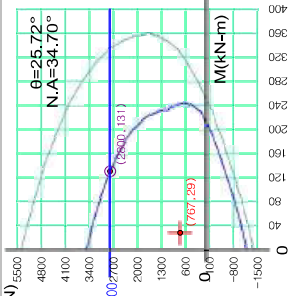
Design Code : KDS 41 20 : 2022
Member Number : 2280 (PM), 2280 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 3C7 (No : 135)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : 2800.23 kN
Axial Load Ratio : $\frac{P_u}{\phi P_n} = 766.896 / 2800.23 = 0.274 < 1.000$ O.K
Moment Ratio : $\frac{M_u}{\phi M_n} = 26.9847 / 130.992 = 0.221 < 1.000$ O.K
 $\frac{M_{cy}}{\phi M_{ny}} = 26.1135 / 118.016 = 0.221 < 1.000$ O.K
 $\frac{M_{cz}}{\phi M_{nz}} = 12.5776 / 56.8428 = 0.221 < 1.000$ O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
3241.88	58.03
2860.98	123.59
2351.37	183.39
1828.90	218.21
1378.34	231.49
1105.84	234.02
941.81	240.27
606.43	244.58
141.34	229.61
-454.52	145.85
-1004.38	40.89
-1168.92	0.00

3. Shear Capacity

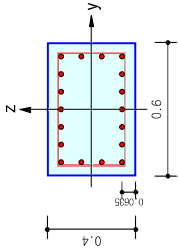
[END] y (LCB : 24, POS : J)
Applied Shear Force (V_u) : 10.2182 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 112.395 + 57.6061 = 185.001 kN
Shear Ratio : $\frac{V_u}{\phi V_c} = 0.055 < 1.000$ O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 24, POS : 1/2)
Applied Shear Force (V_u) : 10.2182 kN
Design Shear Strength ($\phi V_c + \phi V_s$) : 112.800 + 57.6061 = 185.406 kN
Shear Ratio : $\frac{V_u}{\phi V_c} = 0.055 < 1.000$ O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

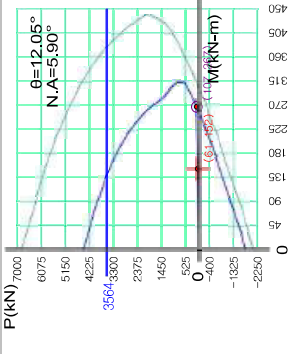
Design Code : KDS 41 20 : 2022
Member Number : 2714 (PM), 2718 (Shear-y,z)
Material Data : f_{ok} = 24000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C7 (No : 481)
Rebar Pattern : 18 - 4 - D19 A_{st} = 0.005157 m² (p_{st} = 0.021)



2. Axial and Moments Capacity

Load Combination : 7 (Pos : J)
Concentric Max. Axial Load φP_n-max = 3563.87 kN
Axial Load Ratio P_u / φP_n = 80.8060 / 106.612 = 0.570 < 1.000 O.K
Moment Ratio M_c / φM_n = 151.837 / 267.491 = 0.568 < 1.000 O.K
M_cy / φM_ny = 148.490 / 261.595 = 0.568 < 1.000 O.K
M_cz / φM_nz = 31.7025 / 55.8502 = 0.568 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
4454.84	0.00
3849.59	100.97
3314.82	168.65
2729.75	221.04
2168.43	254.49
1671.36	275.41
1364.64	286.00
1235.23	295.46
970.04	309.89
543.14	312.03
-212.86	230.43
-1185.06	92.29
-1753.38	0.00

3. Shear Capacity

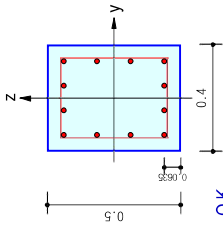
[END] y (LCB : 25, POS : J) z (LCB : 6, POS : J)
Applied Shear Force (V_u) 22.2639 kN 77.2911 kN
Design Shear Strength (φV_c+φV_s) 133.937 + 91.8445 = 225.782 kN 126.471 + 57.6061 = 184.077 kN
Shear Ratio 0.099 < 1.000 O.K 0.420 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 25, POS : 1/2) z (LCB : 6, POS : 1/2)
Applied Shear Force (V_u) 22.2639 kN 77.2911 kN
Design Shear Strength (φV_c+φV_s) 134.520 + 91.8445 = 226.365 kN 127.020 + 57.6061 = 184.626 kN
Shear Ratio 0.098 < 1.000 O.K 0.419 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익로열 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

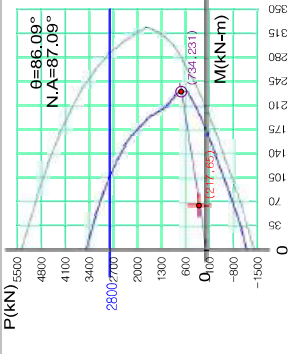
Design Code : KDS 41 20 : 2022
Member Number : 2277 (PM), 2278 (Shear-y,z)
Material Data : f_{ok} = 24000, f_{ys} = 400000 KPa
Column Height : 3.9 m
Section Property : 3C10 (중축) (No : 138)
Rebar Pattern : 12 - 4 - D19 A_{st} = 0.003438 m² (p_{st} = 0.017)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load φP_n-max = 2800.23 kN
Axial Load Ratio P_u / φP_n = 216.917 / 733.846 = 0.296 < 1.000 O.K
Moment Ratio M_c / φM_n = 64.8275 / 230.882 = 0.281 < 1.000 O.K
M_cy / φM_ny = 4.42443 / 15.7575 = 0.281 < 1.000 O.K
M_cz / φM_nz = 64.6763 / 230.343 = 0.281 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
3500.29	0.00
2995.63	82.80
2563.40	134.39
2125.63	169.80
1712.84	191.46
1351.54	204.33
1130.80	210.58
1045.99	216.50
865.80	226.73
567.20	231.21
1.03	174.97
-681.56	79.74
-1168.92	0.00

3. Shear Capacity

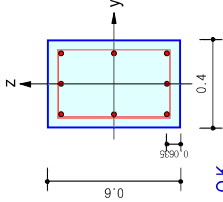
[END] y (LCB : 6, POS : J) z (LCB : 26, POS : J)
Applied Shear Force (V_u) 38.3840 kN 15.1989 kN
Design Shear Strength (φV_c+φV_s) 110.203 + 57.6061 = 167.809 kN 123.435 + 74.7253 = 198.160 kN
Shear Ratio 0.229 < 1.000 O.K 0.077 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 6, POS : 1/2) z (LCB : 26, POS : 1/2)
Applied Shear Force (V_u) 38.3840 kN 15.1989 kN
Design Shear Strength (φV_c+φV_s) 110.608 + 57.6061 = 168.214 kN 123.855 + 74.7253 = 198.581 kN
Shear Ratio 0.228 < 1.000 O.K 0.077 < 1.000 O.K
As-H_{use} 0.00057 m²/m, 2-D10 @250 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익토원 설계에식장중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

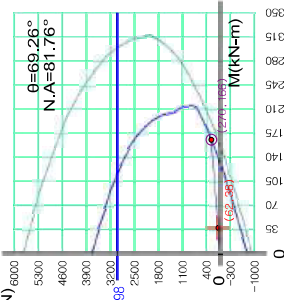
Design Code : KDS 41 20 : 2022
Member Number : 2721 (PM), 2721 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C3 (No : 483)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.010 < p_{min} = 0.010)



2. Axial and Moments Capacity

Load Combination : 26 (Pos : J)
Concentric Max. Axial Load : φP_n-max = 2998.34 kN
Axial Load Ratio : P_u / φP_n = 61.7815 / 269.725 = 0.229 < 1.000 O.K
Moment Ratio : M_c / φM_n = 37.7309 / 166.420 = 0.227 < 1.000 O.K
M_cy / φM_ny = 13.3610 / 58.9314 = 0.227 < 1.000 O.K
M_cz / φM_nz = -35.286 / 155.636 = 0.227 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
3747.93	0.00
3354.17	69.17
2899.10	130.17
2391.42	173.78
1933.37	196.06
1550.10	204.50
1324.64	206.32
1223.86	210.45
1016.90	215.42
684.27	211.79
141.15	150.44
-417.00	64.55
-779.28	0.00

3. Shear Capacity

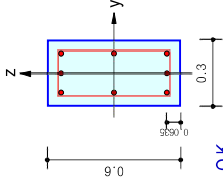
[END] y (LCB : 26, POS : J)
Applied Shear Force (V_u) : 19.8857 kN
Design Shear Strength (φV_c+φV_s) : 125.911 + 57.6061 = 183.517 kN
Shear Ratio : 0.108 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 26, POS : 1/2)
Applied Shear Force (V_u) : 19.8857 kN
Design Shear Strength (φV_c+φV_s) : 126.460 + 57.6061 = 184.066 kN
Shear Ratio : 0.108 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :		Project Title	
		File Name	
Author		김진익토원 설계에식장중속관련 구조안전성검토_ver.09.mgb	

1. Design Condition

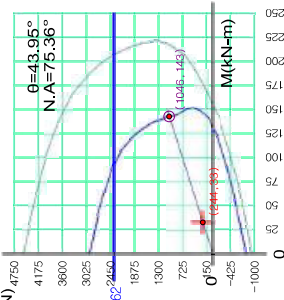
Design Code : KDS 41 20 : 2022
Member Number : 2720 (PM), 2720 (Shear)
Material Data : f_{ck} = 24000, f_y = 400000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C2 (No : 482)
Rebar Pattern : 8 - 3 - D19
UNIT SYSTEM: kN, m
Ast = 0.002292 m² (pst = 0.013)



2. Axial and Moments Capacity

Load Combination : 6 (Pos : I)
Concentric Max. Axial Load : φP_n-max = 2361.86 kN
Axial Load Ratio : P_u / φP_n = 244.338 / 1045.60 = 0.234 < 1.000 O.K
Moment Ratio : M_c / φM_n = 33.2971 / 142.962 = 0.233 < 1.000 O.K
M_cy / φM_ny = -23.970 / 102.917 = 0.233 < 1.000 O.K
M_cz / φM_nz = 23.1112 / 99.2287 = 0.233 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
2952.33	0.00
2752.96	41.12
2413.95	89.58
1951.64	121.03
1496.65	135.95
1114.03	142.32
886.78	144.37
762.17	147.58
490.77	151.81
116.52	141.74
-337.08	89.02
-678.85	24.66
-779.28	0.00

3. Shear Capacity

[END] y (LCB : 24, POS : J)
Applied Shear Force (V_u) : 13.0149 kN
Design Shear Strength (φV_c+φV_s) : 94.2525 + 40.4869 = 134.739 kN
Shear Ratio : 0.097 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

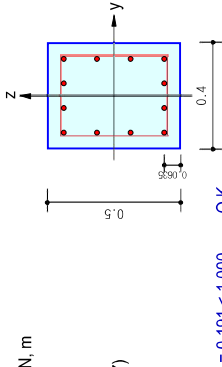
[MIDDLE] y (LCB : 24, POS : 1/2)
Applied Shear Force (V_u) : 13.0149 kN
Design Shear Strength (φV_c+φV_s) : 94.6382 + 40.4869 = 135.125 kN
Shear Ratio : 0.096 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
MIDAS	File Name
Author	김진오트렘 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Condition

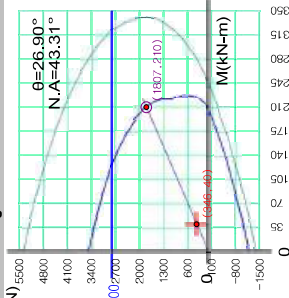
Design Code : KDS 41 20 : 2022
Member Number : 2592 (PM), 2592 (Shear-y,z)
Material Data : f_{ok} = 24000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C7 (No : 471)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 2800.23 kN
Axial Load Ratio : P_u / ϕP_n = 345.798 / 1806.73 = 0.191 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 40.2815 / 210.391 = 0.191 < 1.000 O.K
M_cy / ϕM_ny = 35.9218 / 187.620 = 0.191 < 1.000 O.K
M_cz / ϕM_nz = 18.2269 / 95.1996 = 0.191 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
3500.29	0.00
3259.17	54.35
2896.07	115.49
2400.68	172.32
1838.83	209.38
1352.46	221.41
1052.63	221.17
880.02	225.41
527.50	226.92
44.89	212.95
-520.08	134.28
-1014.03	38.58
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 11.0379 kN
Design Shear Strength (ϕV_c+ϕV_s) : 114.905 + 57.6061 = 172.511 kN
Shear Ratio : 0.064 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

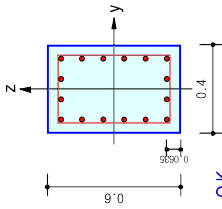
[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 11.0379 kN
Design Shear Strength (ϕV_c+ϕV_s) : 115.363 + 57.6061 = 172.969 kN
Shear Ratio : 0.064 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
MIDAS	File Name
Author	김진오트렘 장례예식장중축관련 구조안전성검토_ver.09.mgb

1. Design Condition

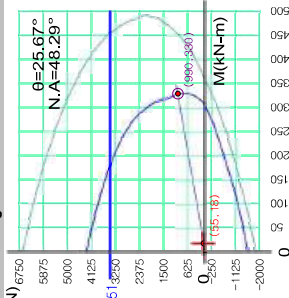
Design Code : KDS 41 20 : 2022
Member Number : 2711 (PM), 2712 (Shear-y,z)
Material Data : f_{ok} = 24000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C4 (No : 484)
Rebar Pattern : 16 - 6 - D19
UNIT SYSTEM: kN, m
Ast = 0.004584 m² (pst = 0.019)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : I)
Concentric Max. Axial Load : ϕP_n-max = 3450.76 kN
Axial Load Ratio : P_u / ϕP_n = 55.4585 / 990.286 = 0.056 < 1.000 O.K
Moment Ratio : M_c / ϕM_n = 18.4120 / 329.736 = 0.056 < 1.000 O.K
M_cy / ϕM_ny = 16.5948 / 297.193 = 0.056 < 1.000 O.K
M_cz / ϕM_nz = -7.9758 / 142.836 = 0.056 < 1.000 O.K

P-M Interaction Diagram



ϕP _n (kN)	ϕM _n (kN-m)
4313.46	0.00
3998.70	79.77
3557.34	163.57
2962.11	242.51
2294.37	294.33
1698.67	314.47
1365.89	319.51
1136.50	327.60
675.99	330.38
35.87	310.11
-712.22	199.43
-1380.60	51.73
-1558.56	0.00

3. Shear Capacity

[END] y (LCB : 25, POS : J)
Applied Shear Force (V_u) : 4.57046 kN
Design Shear Strength (ϕV_c+ϕV_s) : 125.368 + 57.6061 = 182.974 kN
Shear Ratio : 0.025 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

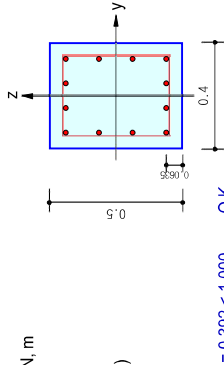
[MIDDLE] y (LCB : 25, POS : 1/2)
Applied Shear Force (V_u) : 4.57046 kN
Design Shear Strength (ϕV_c+ϕV_s) : 125.917 + 57.6061 = 183.523 kN
Shear Ratio : 0.025 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
Author	File Name
김진오로옴 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

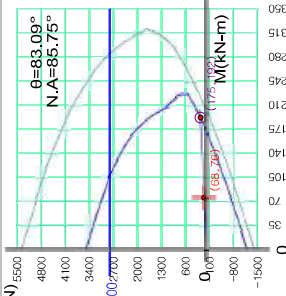
Design Code : KDS 41 20 : 2022
Member Number : 2588 (PM), 2587 (Shear-y,z)
Material Data : f_{ok} = 24000, f_{ys} = 400000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C10 (No : 473)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : J)
Concentric Max. Axial Load : φP_n-max = 2800.23 kN
Axial Load Ratio : P_u / φP_n = 68.4548 / 174.839
Moment Ratio : M_c / φM_n = 75.7149 / 192.460
M_cy / φM_ny = -9.1065 / 23.1478
M_cz / φM_nz = -75.165 / 191.063
= 0.392 < 1.000 O.K
= 0.393 < 1.000 O.K
= 0.393 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
3500.29	0.00
3019.86	78.96
2586.38	131.58
2140.98	168.24
1720.97	190.18
1353.65	202.73
1129.50	208.60
1037.48	214.55
844.17	224.21
530.72	226.82
-43.91	168.64
-717.90	74.08
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 6, POS : J)
Applied Shear Force (V_u) : 40.0208 kN
Design Shear Strength (φV_c+φV_s) : 106.466 + 57.6061 = 164.072 kN
Shear Ratio : 0.244 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

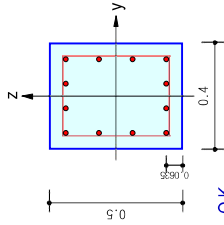
[MIDDLE] y (LCB : 6, POS : 1/2)
Applied Shear Force (V_u) : 40.0208 kN
Design Shear Strength (φV_c+φV_s) : 106.923 + 57.6061 = 164.529 kN
Shear Ratio : 0.243 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

Certified by :

Company	Project Title
Author	File Name
김진오로옴 장례예식장중축관련 구조안전성검토_ver.09.mgb	

1. Design Condition

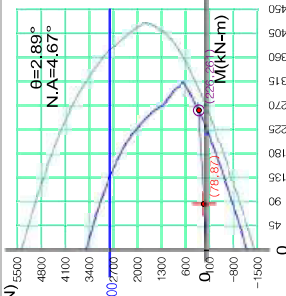
Design Code : KDS 41 20 : 2022
Member Number : 2591 (PM), 2591 (Shear)
Material Data : f_{ok} = 24000, f_{ys} = 400000, f_{ys} = 400000 KPa
Column Height : 4.4 m
Section Property : 4C9 (No : 480)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 24 (Pos : J)
Concentric Max. Axial Load : φP_n-max = 2800.23 kN
Axial Load Ratio : P_u / φP_n = 77.7687 / 225.598
Moment Ratio : M_c / φM_n = 86.7359 / 261.492
M_cy / φM_ny = -86.625 / 261.159
M_cz / φM_nz = -4.3798 / 13.2042
= 0.345 < 1.000 O.K
= 0.332 < 1.000 O.K
= 0.332 < 1.000 O.K

P-M Interaction Diagram



φP _n (kN)	φM _n (kN-m)
3500.29	0.00
3007.43	104.13
2573.71	172.56
2147.22	218.50
1748.34	248.04
1401.70	266.54
1191.37	275.79
1103.70	285.07
928.66	299.73
662.43	314.82
126.61	247.96
-554.53	125.99
-1168.92	0.00

3. Shear Capacity

[END] y (LCB : 24, POS : J)
Applied Shear Force (V_u) : 2.09330 kN
Design Shear Strength (φV_c+φV_s) : 105.893 + 57.6061 = 163.499 kN
Shear Ratio : 0.013 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

[MIDDLE] y (LCB : 24, POS : 1/2)
Applied Shear Force (V_u) : 2.09330 kN
Design Shear Strength (φV_c+φV_s) : 105.827 + 57.6061 = 163.433 kN
Shear Ratio : 0.013 < 1.000 O.K
As-H_{use} : 0.00057 m²/m, 2-D10 @250

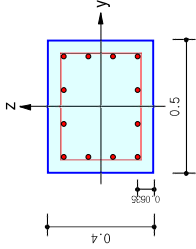
Certified by :

Company		Project Title
Author		File Name

김진익로템 설계에식정중속관련 구조안전성검토_ver.09.mgb

1. Design Condition

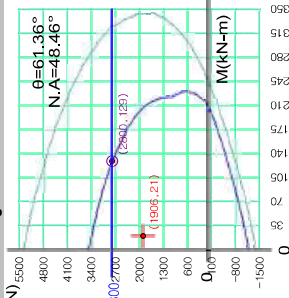
Design Code : KDS 41 20 : 2022
Member Number : 490 (PW), 493, 490 (Shear-y,z)
Material Data : fck = 24000, fy = 400000, fys = 400000 KPa
Column Height : 3.9 m
Section Property : BC7 (No : 61)
Rebar Pattern : 12 - 4 - D19
UNIT SYSTEM: kN, m
Ast = 0.003438 m² (pst = 0.017)



2. Axial and Moments Capacity

Load Combination : 81 (Pos : I)
Concentric Max. Axial Load : ϕP_n -max = 2800.23 kN
Axial Load Ratio : $P_u / \phi P_n$ = 1905.56 / 2800.23
Moment Ratio : $M_u / \phi M_n$ = 20.9187 / 129.296
 $M_{cy} / \phi M_{ny}$ = 10.0280 / 61.9820
 $M_{cz} / \phi M_{nz}$ = -18.358 / 113.471
 $= 0.680 < 1.000$ O.K
 $= 0.162 < 1.000$ O.K
 $= 0.162 < 1.000$ O.K

P-M Interaction Diagram



ϕP_n (kN)	ϕM_n (kN-m)
3500.29	0.00
3255.61	55.18
2888.85	117.28
2390.54	174.50
1836.79	210.80
1357.78	223.07
1063.57	223.51
892.73	228.21
543.73	230.39
64.72	216.38
-506.60	136.94
-1012.04	39.27
-1168.92	0.00

3. Shear Capacity

[END]		y (LCB : 100, POS : J)	z (LCB : 99, POS : J)
Applied Shear Force (Vu)	25.1913 kN	164.519 + 57.6061 = 222.125 kN	9.11605 kN
Design Shear Strength ($\phi V_c + \phi V_s$)	169.707 + 74.7253 = 244.432 kN	0.041 < 1.000 O.K	0.041 < 1.000 O.K
Shear Ratio	0.103 < 1.000 O.K	0.00057 m²/m, 2-D10 @250	0.00057 m²/m, 2-D10 @250
As-H_use	0.00057 m²/m, 2-D10 @250		
[MIDDLE]		y (LCB : 100, POS : 1/2)	z (LCB : 99, POS : 1/2)
Applied Shear Force (Vu)	25.1913 kN	164.519 + 57.6061 = 222.125 kN	9.11605 kN
Design Shear Strength ($\phi V_c + \phi V_s$)	170.127 + 74.7253 = 244.853 kN	0.041 < 1.000 O.K	0.041 < 1.000 O.K
Shear Ratio	0.103 < 1.000 O.K	0.00057 m²/m, 2-D10 @250	0.00057 m²/m, 2-D10 @250
As-H_use	0.00057 m²/m, 2-D10 @250		

6. 보 강 설 계

■ Design Conditions ■

Design Code: KCI-USD12

Material Data

$$f_{ck} = 24 \text{ N/mm}^2$$

$$f_y = 400, \quad f_{ys} = 400 \text{ N/mm}^2$$

Section Data

$$B = 400 \text{ mm} \quad H = 700 \text{ mm}$$

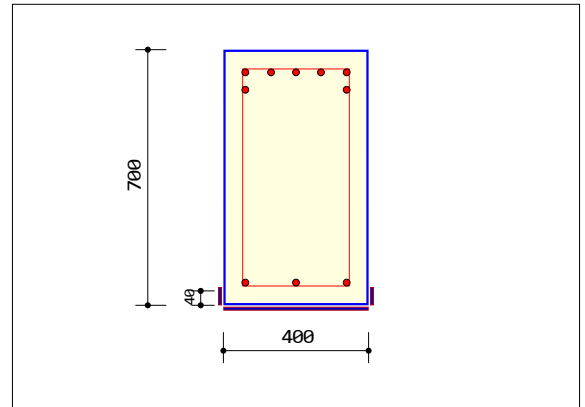
Rebar Data

Upper : 5/2 - D22

Lower : 3/0 - D22

Stirrup : 2 - D10 @ 150

Total Rebar Area = 3871 mm² ($\rho_{st}=0.0138$)



■ Strengthening Materials ■

Type	Width (mm)	Thk. (mm)	Stren (N/mm ²)	ϵ_{Allow}	Reduc. Fact
Bottom	400	0.1670	2437.0	0.0105	0.700
Side	50	0.1670	2437.0	0.0105	0.700

■ Design Force and Moment ■

$$M_u = 321.2 \text{ kN}\cdot\text{m}, \quad V_u = 165.8 \text{ kN}$$

■ Check Bending Moment Capacity - Original Section ■

Strength Reduction Factor $\phi = 0.850$

Neutral Axis Depth $c = 75 \text{ mm}$

Max. Tensile strain $\epsilon_t = 0.0226 > 0.0040 \rightarrow \text{O.K.}$

Tension : Rebar $T_s = -668.9 \text{ kN}$

Compression : Rebar $C_s = 201.7 \text{ kN}$

Compression : Concrete $C_c = 467.3 \text{ kN}$

Design Moment Capacity $\phi M_n = 249.0 \text{ kN}\cdot\text{m}$

$M_u / \phi M_n = 1.290 > 1.000 \rightarrow \text{Strengthening}$

■ Check Bending Moment Capacity - Strengthening Section ■

Strength Reduction Factor $\phi = 0.850$

Neutral Axis Depth $c = 80 \text{ mm}$

Max. Tensile strain $\epsilon_t = 0.0210 > 0.0040 \rightarrow \text{O.K.}$

Tension : Rebar $T_s = -625.5 \text{ kN}$

Tension : FRP $T_{FRP} = -142.4 \text{ kN}$

Compression : Rebar $C_s = 258.6 \text{ kN}$

Compression : Concrete $C_c = 509.1 \text{ kN}$

Design Moment Capacity $\phi M_n = 323.8 \text{ kN}\cdot\text{m}$

$M_u / \phi M_n = 0.992 < 1.000 \rightarrow \text{O.K.}$

■ Check Strain in FRP at Required Flexural Strength ■

Design Moment Capacity $M_n = 321.2 \text{ kN}\cdot\text{m}$

Neutral Axis Depth $c = 111 \text{ mm}$

Strain in Concrete $\epsilon_c = 0.0010$

Max. Strain in FRP $\epsilon_{FRP} = 0.0037 < \epsilon_{Allow} = 0.0105 \rightarrow \text{O.K.}$



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■ Check Shear Strengthening ■Strength Reduction Factor $\phi = 0.750$

$$\phi V_n = \phi(208.8 + 243.2) = 339.0 \text{ kN} > V_u = 165.8 \text{ kN} \text{ ---> O.K.}$$

Design Conditions

Design Code: KCI-USD12

Material Data

$$f_{ck} = 24 \text{ N/mm}^2$$

$$f_y = 400, \quad f_{ys} = 400 \text{ N/mm}^2$$

Section Data

$$B = 500 \text{ mm} \quad H = 900 \text{ mm}$$

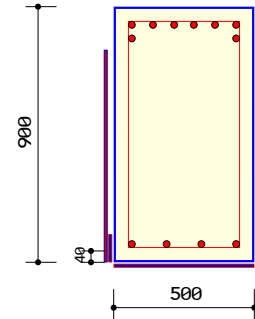
Rebar Data

Upper : 6/2 - D22

Lower : 4/0 - D22

Stirrup : 2 - D13 @ 150

Total Rebar Area = 4645 mm² ($\rho_{st}=0.0103$)



Strengthening Materials

Type	Width (mm)	Thk. (mm)	Stren (N/mm ²)	ϵ_{Allow}	Reduc. Fact
Bottom	500	0.3340	2437.0	0.0105	0.700
Side	100	0.3340	2437.0	0.0105	0.700
Shear	750	0.1670	2437.0	0.0105	0.300

Design Force and Moment

$$M_u = 685.9 \text{ kN}\cdot\text{m}, \quad V_u = 616.6 \text{ kN}$$

Check Bending Moment Capacity - Original Section

Strength Reduction Factor $\phi = 0.850$

Neutral Axis Depth $c = 77 \text{ mm}$

Max. Tensile strain $\epsilon_t = 0.0296 > 0.0040 \rightarrow \text{O.K.}$

Tension : Rebar $T_s = -825.0 \text{ kN}$

Compression : Rebar $C_s = 217.0 \text{ kN}$

Compression : Concrete $C_c = 608.0 \text{ kN}$

Design Moment Capacity $\phi M_n = 431.5 \text{ kN}\cdot\text{m}$

$M_u / \phi M_n = 1.589 > 1.300 \rightarrow \text{N.G.}$

Check Bending Moment Capacity - Strengthening Section

Strength Reduction Factor $\phi = 0.850$

Neutral Axis Depth $c = 92 \text{ mm}$

Max. Tensile strain $\epsilon_t = 0.0243 > 0.0040 \rightarrow \text{O.K.}$

Tension : Rebar $T_s = -716.2 \text{ kN}$

Tension : FRP $T_{FRP} = -398.8 \text{ kN}$

Compression : Rebar $C_s = 392.2 \text{ kN}$

Compression : Concrete $C_c = 723.3 \text{ kN}$

Design Moment Capacity $\phi M_n = 705.8 \text{ kN}\cdot\text{m}$

$M_u / \phi M_n = 0.972 < 1.000 \rightarrow \text{O.K.}$

Check Strain in FRP at Required Flexural Strength

Design Moment Capacity $M_n = 685.9 \text{ kN}\cdot\text{m}$

Neutral Axis Depth $c = 131 \text{ mm}$

Strain in Concrete $\epsilon_c = 0.0011$

Max. Strain in FRP $\epsilon_{FRP} = 0.0045 < \epsilon_{Allow} = 0.0105 \rightarrow \text{O.K.}$

■ Check Shear Strengthening ■Strength Reduction Factor $\phi = 0.750$

$$\phi V_n = \phi(341.4 + 565.0 + 183.1) = 817.2 \text{ kN} > V_u = 616.6 \text{ kN} \text{ ---> O.K.}$$

Design Conditions

Design Code: KCI-USD12

Material Data

$$f_{ck} = 24 \text{ N/mm}^2$$

$$f_y = 400, \quad f_{ys} = 400 \text{ N/mm}^2$$

Section Data

$$B = 400 \text{ mm} \quad H = 800 \text{ mm}$$

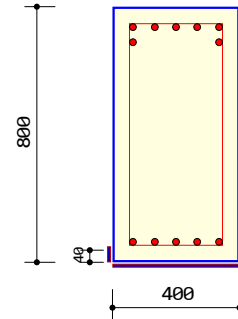
Rebar Data

Upper : 5/2 - D22

Lower : 5/0 - D22

Stirrup : 2 - D13 @ 150

$$\text{Total Rebar Area} = 4645 \text{ mm}^2 \quad (\rho_{st}=0.0145)$$



Strengthening Materials

Type	Width (mm)	Thk. (mm)	Stren (N/mm ²)	ϵ_{Allow}	Reduc. Fact
Bottom	400	0.1670	2437.0	0.0105	0.700
Side	50	0.1670	2437.0	0.0105	0.700

Design Force and Moment

$$M_u = 538.8 \text{ kN}\cdot\text{m}, \quad V_u = 337.6 \text{ kN}$$

Check Bending Moment Capacity - Original Section

Strength Reduction Factor $\phi = 0.850$

Neutral Axis Depth $c = 90 \text{ mm}$

Max. Tensile strain $\epsilon_t = 0.0215 > 0.0040 \rightarrow \text{O.K.}$

Tension : Rebar $T_s = -881.5 \text{ kN}$

Compression : Rebar $C_s = 312.7 \text{ kN}$

Compression : Concrete $C_c = 568.8 \text{ kN}$

Design Moment Capacity $\phi M_n = 459.9 \text{ kN}\cdot\text{m}$

$$M_u / \phi M_n = 1.172 > 1.000 \rightarrow \text{Strengthening}$$

Check Bending Moment Capacity - Strengthening Section

Strength Reduction Factor $\phi = 0.850$

Neutral Axis Depth $c = 97 \text{ mm}$

Max. Tensile strain $\epsilon_t = 0.0198 > 0.0040 \rightarrow \text{O.K.}$

Tension : Rebar $T_s = -841.5 \text{ kN}$

Tension : FRP $T_{FRP} = -142.4 \text{ kN}$

Compression : Rebar $C_s = 367.1 \text{ kN}$

Compression : Concrete $C_c = 616.8 \text{ kN}$

Design Moment Capacity $\phi M_n = 546.4 \text{ kN}\cdot\text{m}$

$$M_u / \phi M_n = 0.986 < 1.000 \rightarrow \text{O.K.}$$

Check Strain in FRP at Required Flexural Strength

Design Moment Capacity $M_n = 538.8 \text{ kN}\cdot\text{m}$

Neutral Axis Depth $c = 200 \text{ mm}$

Strain in Concrete $\epsilon_c = 0.0008$

Max. Strain in FRP $\epsilon_{FRP} = 0.0017 < \epsilon_{\text{Allow}} = 0.0105 \rightarrow \text{O.K.}$



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■ Check Shear Strengthening ■Strength Reduction Factor $\phi = 0.750$

$$\phi V_n = \phi(240.4 + 497.5) = 553.4 \text{ kN} > V_u = 337.6 \text{ kN} \text{ ---> O.K.}$$